

# ARCHITECTURAL RECORD



DECEMBER 1957

BUILDING TYPES STUDY: CHURCHES

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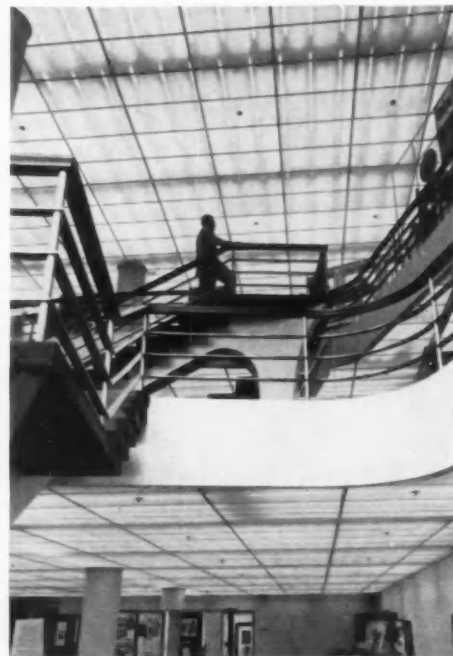


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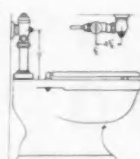
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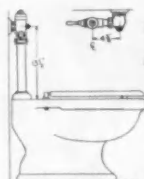
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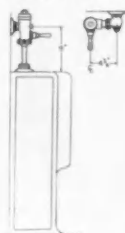
M-532 MAJESTIC  
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M-432 IMPERIAL  
(Piston)



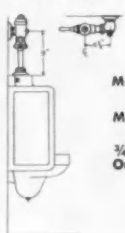
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(Diaphragm)  
M-452 IMPERIAL  
(Piston)



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(Diaphragm)  
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# of washroom economy

## Watrous flush valves provide substantial savings in operation and maintenance

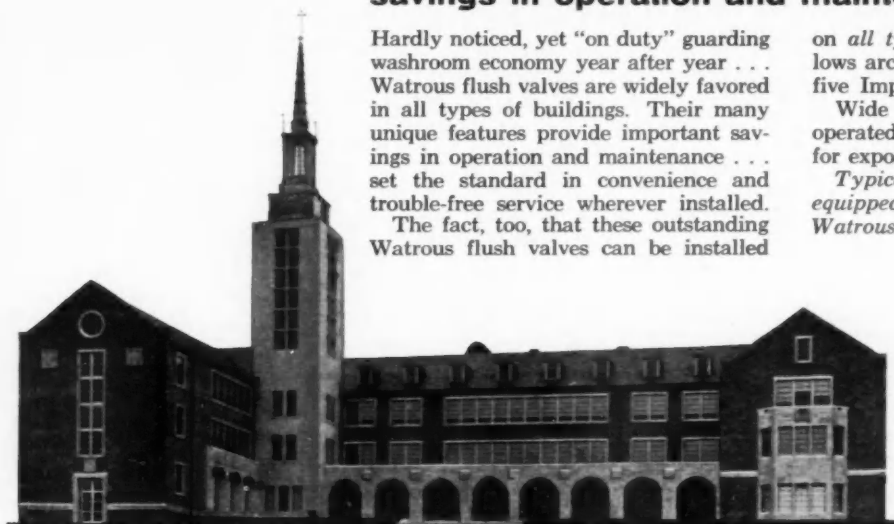
Hardly noticed, yet "on duty" guarding washroom economy year after year . . . Watrous flush valves are widely favored in all types of buildings. Their many unique features provide important savings in operation and maintenance . . . set the standard in convenience and trouble-free service wherever installed.

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December 1957 Vol. 122 No. 6

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In the ancient land of old masters, Walter Gropius has the role of old master carrying oil to Newcastle, doing the same old problem in the manner of a new age, but with a purpose not unknown in this land, "a building which should appear serene, peaceful and inviting . . ."  
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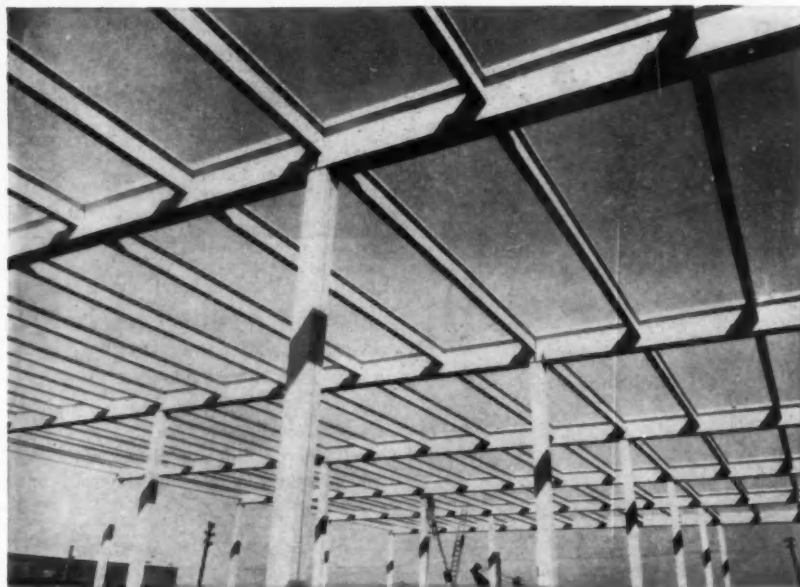
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Structural Engineer: HARWOOD & GOULD, New York City

General Contractor: WALTER KIDDE CONSTRUCTION COMPANY, New York City

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(right) *The Castle*—Vitreous China regular rim water closet. Modern panel bowl and tank matches other U/R fixtures. Available in U/R colors and Arctic White.

(below) *The Christina*—New Vitreous China Counter Top Lavatory may be mounted in a tiled-in counter top . . . mounted back-to-wall . . . or in a counter-sunk mounting.



# Universal Rundle

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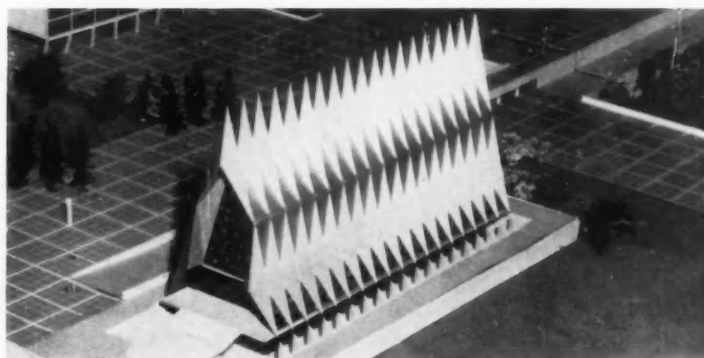
Plants in Camden, N. J.; Milwaukee, Wisc.; New Castle, Pa.; Redlands, Calif.; Hondo, Texas

# THE RECORD REPORTS

## P E R S P E C T I V E S

### AIR ACADEMY CHAPEL: PROFESSIONAL OPINION

*Congressmen are vociferously dubious; many religious leaders have enthusiastically praised it; what do architects think? The RECORD queried some leading architects, architectural deans and architectural critics. The responses follow.*



It is a combination of modern with medieval. Although the design is highly contemporary, it has a very definite ecclesiastical feeling. This is achieved by the buttress-like effect of the exterior and the rhythmic repetition of the aluminum "buttresses" and their surmounting pinnacles. The chaste use of a band of stained glass running vertically between the aluminum heightens this feeling.

Architecture should harmonize, if possible, with geographic surroundings and the pinnacles symbolize architecturally the sharp mountains which serve as the Academy's backdrop.

For young men being trained for modern aircraft and missiles, use of aluminum as the basic exterior material is far more fitting than would be a more traditional chapel of dark and heavy stone or ponderous, earthy materials.

— **Welton Becket, Architect**

The recent references to the proposed design concept for the United States Air Force Academy Chapel as a monstrosity were appalling to me.

It is incredible to think that the expressions of spiritual values in this age of atomic energy and the conquest of outer space should be so completely archaic, so inconsistent with the true meaning of an enlightened religious environment.

The proposed design for this chapel not only reflects and relates the symbol of religion to modern-day education,

but would have completely destroyed this synthesis if it had been constructed in a traditional style.

My heartiest congratulations to Skidmore, Owings & Merrill for their courage and honesty.

— **Mario J. Ciampi, Architect**

Religious idea and feeling are elements in every phase of human life and their expression in architecture is never inappropriate. Nevertheless there are measures of appropriateness. In every work of architecture there must be a just relationship between devotional expression and the purpose and character of the enterprise in which that devotion is a part.

The chapel of the Air Force Academy, set on its pedestal above rectangular and cloistered buildings — an aluminum flame over an altar of glass — will be more consistent in its expression with the life and temper of a monastery than with the cool disciplines of a military institution. The religion inherent in such disciplines must have an ethical emphasis — the religion of men who offer their lives in defense of the right — the religion that is instinct in the stoic simplicities of the academic buildings, the laboratories and the cadet quarters. The chapel contradicts that which these buildings teach.

Like the chapel at West Point the chapel in Colorado looks backward to a medieval pattern and yet dramatically exhibits a contemporary theory of archi-

ture. In that respect the design is resourceful, imaginative, opportune in its technologies and, in its scenic effects, superb. But the modern theory also includes a just expression of character.

Designing a chapel is a priest-like task.

— **Joseph Hudnut,**

**Critic and former Dean,**

**Harvard Graduate School of Design**

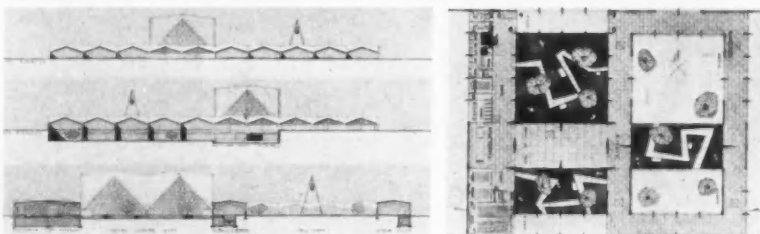
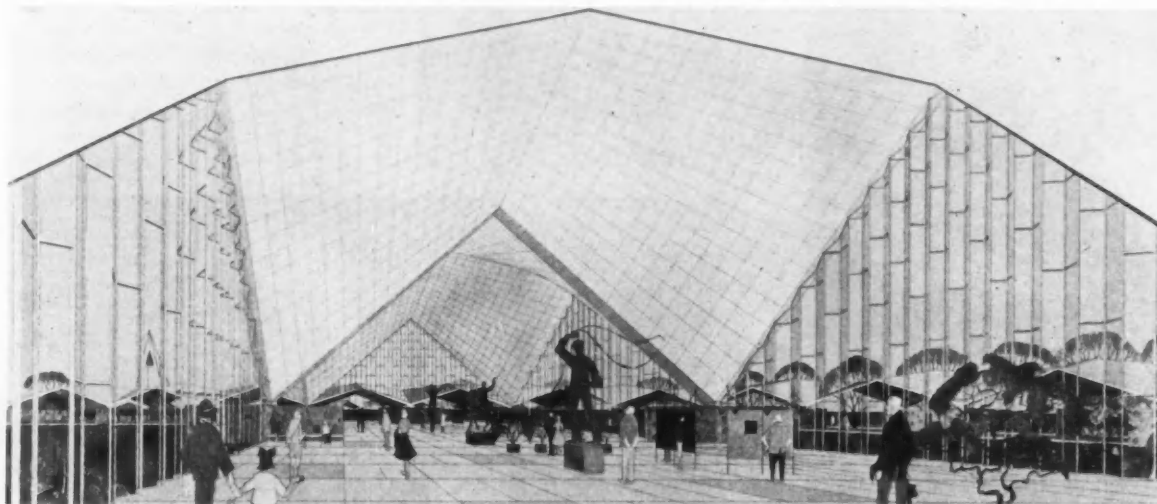
First of all it is my opinion that Congress has the right to question, investigate, and recommend, but not to judge, accuse, or condemn. This question was brought up not long ago in the McCarthy investigation in which he was criticized for exactly this reason. In that case it was his job to gather facts, leaving to the Justice Department the matter of actual judgment. We have no National Fine Arts Commission as a Federal bureau, nor is there a private professional advisory board such as set up to advise the State Department's Office of Foreign Buildings. Being commissioned myself to design an Embassy and working with this Architectural Advisory Board, I can say that it works with great effectiveness. It is obvious to me that we should have a Board of this kind to deal with controversies such as the Air Force Academy and for any and all such matters in the future.

As to the design concept, I hesitate to become involved in public criticism of the work by others in the profession. However, I will say that although not

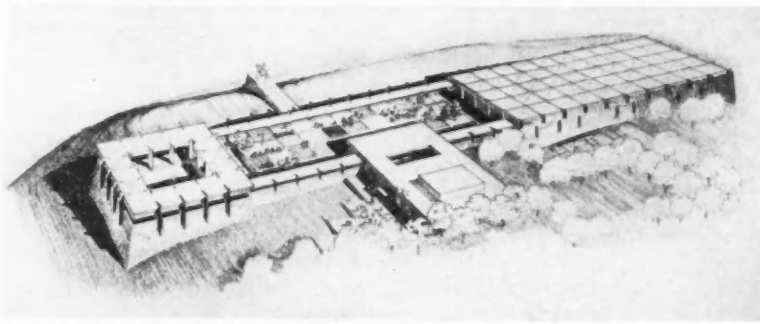
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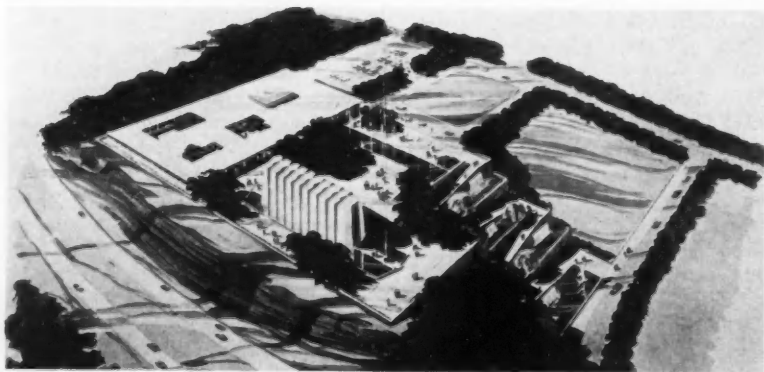
ARCHITECTURE SALUTES THE AMERICAN COWBOY



FIRST AWARD (commission) — H. J. Begrow and J. W. Brown, Birmingham, Mich.



SECOND AWARD (\$3000) — Joseph D'Amelio-William I. Hohauser Inc., New York



THIRD AWARD (\$2500) — Ambrose M. Richardson and Associates, Champaign, Ill.

Two young architects from Birmingham, Mich., Harold Jack Begrow and Jack W. Brown, won the First Award in the recent two-stage competition for design of the National Cowboy Hall of Fame and Museum to be built on a 37-acre site on the outskirts of Oklahoma City. Their prize is the commission for the project, expected in its first phase to cost \$1.5 million; a \$10,000 advance was paid with announcement of the award.

Sponsors of the competition, which had the approval of the American Institute of Architects, were the trustees of a non-profit corporation organized — mainly through the initiative of cattleman C. A. Reynolds of Kansas City — "to establish an enduring edifice to the memory of the cowboys and cattlemen who were influential in developing the West and in helping to create a great many of the tenets of the democratic philosophy on which the American way of life is based."

Philip A. Wilbur, A.I.A., of Oklahoma City was professional adviser; the jury consisted of Frank N. McNett, A.I.A., Grand Island, Neb. (chairman); O'Neil Ford, A.I.A., San Antonio; John Carl Warnecke, A.I.A., San Francisco; and corporation trustees Albert K. Mitchell, Albert, N. Mex., and Roy J. Turner, Oklahoma City.

The program, which called for construction in two stages, required a design to consist of (1) the Hall of Fame, "the shrine or memorial devoted to the persons so honored"; (2) the Museum, "the repository of records, artifacts, paintings and memorabilia of the life and times of



the cowboy and his contribution to the expansion and development of the United States"; (3) other public spaces, including a library, meeting rooms for lectures and films, a donor's room "to provide proper recognition for those who make the enterprise possible," rest rooms and lounges and souvenir shops; (4) working areas, storage and service facilities; and (5) exterior circulation, parking and site development. The space requirements and construction funds for various facilities in both initial and ultimate stages of the project were specifically set out.

The competition attracted a total of 1981 applications from 47 states; 257 entries were received in the first stage, and ten of the competitors were then selected by the jury for the final phase.

In a verbal critique following the awards, a spokesman for the jury had these comments: "Probably the first consideration and one of the things on which we pondered most was the precedent for a building type for the National Cowboy Hall of Fame and Museum, and it was fairly well agreed that there were no particular historical building types for this particular grouping of buildings, although symbolically there might be certain expressions in past historical types that might fit it. The second scheme comes closer to this aspect. But when we really analyze the American cowboy and the pioneer of the West, he did not have buildings about him; his was a movement going West which evolved around open spaces and that of freedom, and not big heavy buildings. Therefore the whole concept of the winning design is a pioneering or new approach to museums or to a Hall of Fame — one that expresses an openness to both the inside and the outside, and creates within an environment which with certain modifications will enhance both the inside and the outside. The winning design is basically more flexible; it is the presentation of an idea that can easily be adapted to changes. It is easier to add on to. It will always be a completed building in any increment that is constructed. It has an overall continuity of structural design in increments that are small enough so that they can be added in big or small sections as required. . . . The whole Museum concept then is a series of these small cubicles or increments of construction which form a garden type of arcade which one wanders through and around; and looks at the museum objects and artifacts and can wander out into the garden, can rest in the garden . . . and/or continue through the Museum."

#### FOURTH PLACE AWARDS (\$1500 each)



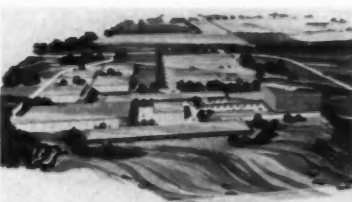
*E. Davis Wilcox Associates, Tyler, Tex.*



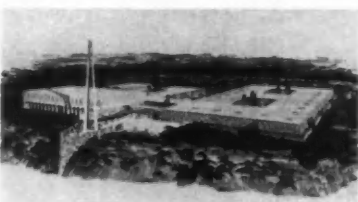
*James Miller and Jack C. Durgan, Manhattan, Kan.*



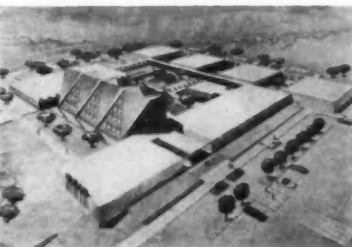
*Moritz Kundig, Spokane*



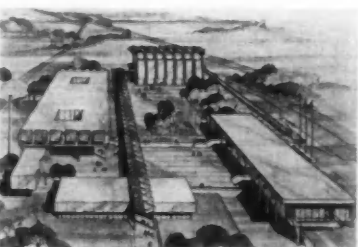
*Bauer and Corbett and Kenneth M. Mitchell, Newark, N. J.*



*Hudgins, Thompson, Ball & Associates, Oklahoma City*



*Robert S. Swanson, Bloomfield Hills, Mich.*



*Kirk R. Craig and F. Earle Gauden, Greenville, S. C.*

## THE RECORD REPORTS

### BUILDINGS IN THE NEWS

(Continued from page 11)

#### SARASOTA EXHIBIT SPOTLIGHTS ARCHITECTURE OF REGION



*INSTALLATION consisted of cloth-covered aluminum framework especially designed for the exhibit; it is demountable and will be available for reuse*



4



3



How effectively the cause of architecture can be promoted in small communities where architects may be very few in number and their organization funds correspondingly limited is strikingly illustrated by two highly successful projects of the Sarasota-Bradenton Association of Architects for the local celebration of the Centennial Year of the American Institute of Architects.

The first was the inauguration of what it is hoped will be an annual architectural exhibit of work of Association members, held last Spring at the Ringling Art Museum in Sarasota. The exhibit was seen by nearly 4000 persons during its two-week showing. It put local buildings "in the news" (some shown on this page), including work by Paul Rudolph, with John Crowell and Eliot Fletcher, Jack West, Carl Vollmer, Sidney Wilkinson, William Rupp, William

Zimmerman, John Crowell, Kanneberg and Hanebuth, Victor Lundy, Ralph S. Twitchell, E. J. Seibert, R. H. Slater, Sellew and Gremli, and E. B. Waters.

The second achievement was a 24-page special section of the *Sarasota Herald-Tribune*, published July 28, containing — as front page headlines proclaimed — "a presentation of the recent work of Sarasota-Bradenton architects in honor of the American Institute of Architects 100th anniversary celebration." It also included an article on the A.I.A. itself headlined "A.I.A. was Formed 100 Years Ago to Create Standards of Performance, Code of Ethics."

The Association, which has had the assistance of a professional public relations council, has 19 members of the A.I.A. As for community size; Sarasota — pop. 18,896; Bradenton — pop. 13,604 (1950 census).



2

**AMONG PROJECTS ON DISPLAY**  
1. *Sarasota Herald-Tribune Building*, publishing plant for Lindsay Newspapers Inc.; Ralph and William Zimmerman, Architects. 2. *Office Building, Bayshore*

*Gardens; Sidney Wilkinson, Architect.* 3. *"Canal House," Siesta Key, Sarasota; Jack West, Architect.* 4. *"Round House" (for the architect), Sarasota; Carl Vollmer, Architect*



1



## LATEX PAINT FACTS FOR ARCHITECTS

*New 16-page booklet tells why and where to specify latex paints*

Now in one easy-to-use booklet you can get answers to your questions on latex paints—their uses, benefits and limitations. "Why and Where To Specify Latex Paints" was written to serve as a helpful guide for architects, specification writers and contractors.

This booklet answers such questions as: On what interior and exterior surfaces can I specify latex paints? Where should they not be specified? Why can they be applied over freshly dried plaster? Why don't surfaces

need to be primed before latex paints are applied? Can coats of latex paints and oil paints be applied alternately in successive coats? What controls chalking in latex paints?

Get the answers now to these and the other questions you have about latex paints. For your copy of this booklet write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1836WW-1.



YOU CAN DEPEND ON

## Compact copper sanitary drainage system gives

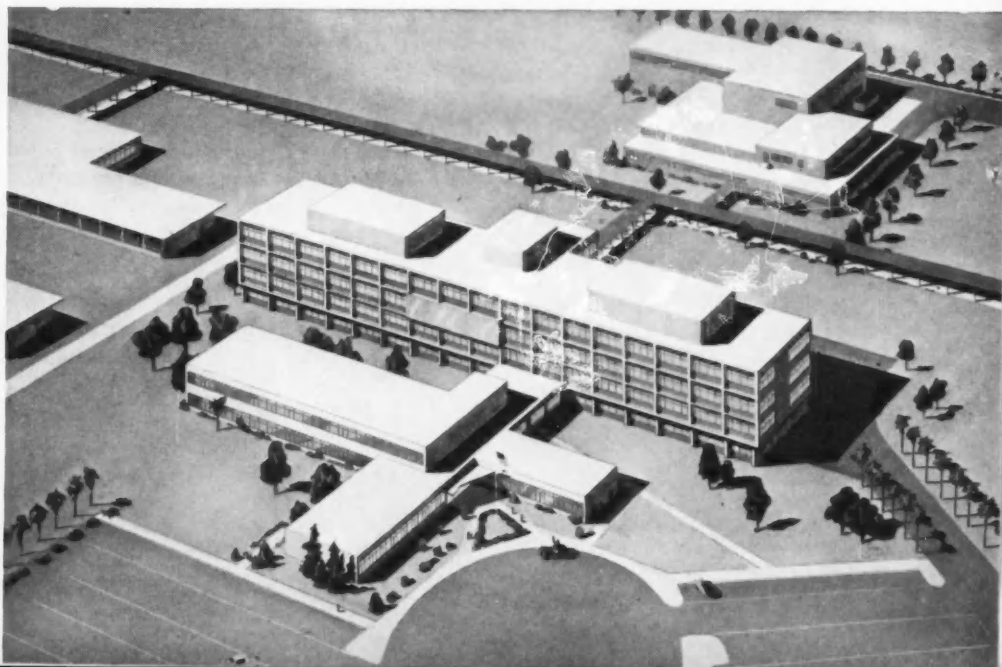


**Easy to handle.** One mechanic easily lifts and engages a length of 6-inch copper drainage tube. More than 16,000 pounds of Anaconda Copper Tube, Type M, in sizes up to 8 inches, was used for the sanitary drainage systems.

Architect's rendering (right) of Fairview State Hospital now under construction at Costa Mesa, Calif. Project will provide the most modern facilities for the care of more than 4,000 mentally retarded children and adults.

*Architect and Engineer:* California State Division of Architecture. *Mechanical Engineer:* Division of Architecture. *General Contractor:* Robert E. McKee, Inc., Los Angeles. *Plumbing Contractor:* E. O. Nay Co., Inc., Pasadena.

Anaconda Copper Tube for sanitary drainage and water lines supplied by Grinnell Company of the Pacific, Los Angeles. Radiant-heating system installed by C & H Heating Co., South Gate, Calif. Anaconda Copper Tube for heating system supplied by the Crane Company, Los Angeles.





# new California hospital more usable space

**Easier, faster installation, long life, and low maintenance also important factors in choice of copper tube for Fairview State Hospital**

Copper tube was specified for the sanitary drainage lines in the Hospital Building and Administration Wing of the new Fairview State Hospital now under construction at Costa Mesa, California, to eliminate wasted space in furred areas and to allow ample headroom in the basement. Equally important to the project owners, however, was the fact that copper tube drainage systems are easier to install, are long-lasting, and require less maintenance than other materials.

Copper tube was used also for the hot and cold water lines and for the radiant heating system.

## TREND TO COPPER

"The factors important to us as mechanical contractors are the work-saving features of copper tube. It has proved to be easier to handle, more adaptable to space problems, less trouble to test, and, as a consequence, faster to install than other methods considered standard.

"Our firm is of the opinion that copper tube drainage systems will become standard in the place of those now in use, when the people who are associated with the construction industry become more aware of the many advantages."

B. J. Sabin, manager, E. O. Nay Co., Inc.,  
plumbing contractor on Fairview State Hospital

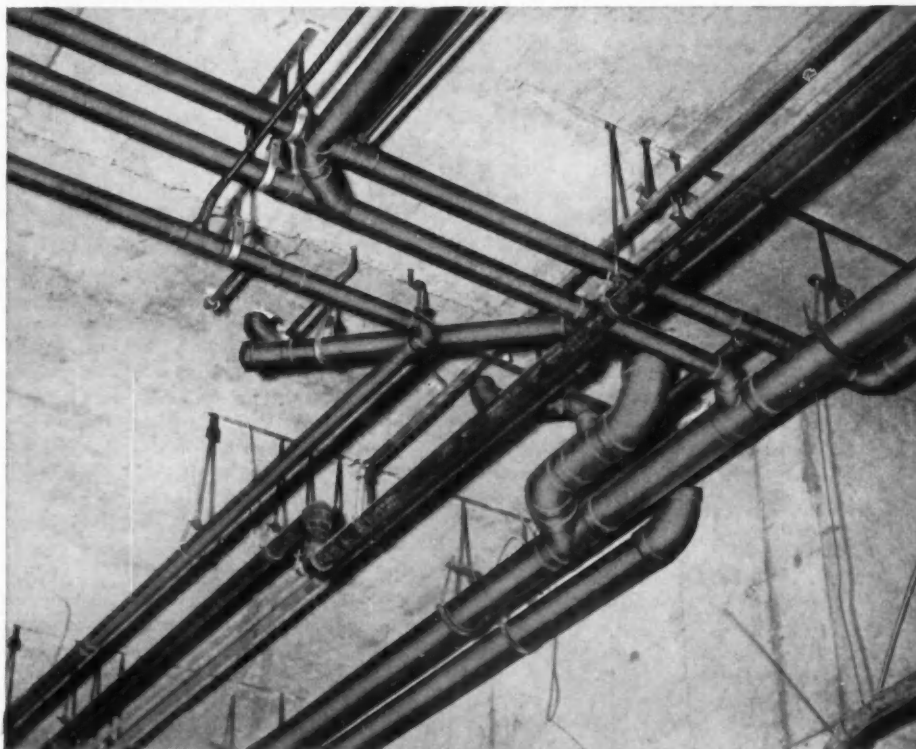
**Everyone benefits with all-copper plumbing.** Architects have greater freedom in design to locate bathrooms and utilities where desired without sacrificing useful space. Contractors report that installation time has been reduced one-third to one-half—and their men prefer working with copper tube. Owners get plumbing that lasts—costs little to maintain.

**Anaconda Copper Tubes** — Types K and L for water supply and heating lines; Type M and the new lighter weight Type DWV for the sanitary drainage system. Anaconda wrought and cast solder-joint fittings in a wide range of sizes and types for pressure and drainage applications. Write for Publication C-33. Address: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.

0704



**Easy to connect.** Preparing to solder an 8" to 6" cast-brass drainage Y-branch fitting. Solder-joint fittings help cut installation time one-third to one-half. No threading, no caulking. No heavy, cumbersome equipment needed.



**Close work like this** is possible only with copper tube. Water and drainage lines hug the ceiling, giving ample basement headroom. Even in tight quarters, connections are easy to make. Sizes in this layout range from 3/4" water lines at top to 4" for drain and vent lines at right below.

# ANACONDA®

## COPPER TUBES AND FITTINGS

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## THE RECORD REPORTS

### PRESERVATION: NEW CHALLENGE TO MODERN ARCHITECTURE?

*Annual Meeting of National Trust for Historic Preservation And Expanding Program Reflect Wider Concern with a Problem Vastly Magnified by U.S. Urban Renewal and Highway Programs*

An expanding program with increasing implications for architecture was reflected in the discussions and activities reported at the 11th annual meeting of the National Trust for Historic Preservation, held at Swampscott, Mass., in October. Attendance by some 450 delegates and members was more than double that at any prior meeting; and there was big news for this record gathering in the announcement of two grants totaling \$2.5 million to the National Trust from the Old Dominion Foundation and the Avalon Foundation: this started the Trust on the road to the \$10 million endowment needed to finance the broader service envisioned for it earlier this year in a report by a special Committee on Planning.

Two major developments:

(1) Announcement of a formal agreement with the National Park Service to continue and expand collaboration between the two groups, especially in connection with the Historic Sites Survey, and in the formulation and adoption of criteria and standards for the preservation and exhibition of historic sites and buildings.

(2) Authorization of a special committee, to be set up by The National Trust, consisting of the chairmen of the architectural control boards of the 15 (now 16) U. S. communities which have them; the committee to provide a forum for discussion at future National Trust meetings; a channel for exchange of information and experience; and a source of advice for new architectural control boards as they are set up.

The formal program was divided fairly evenly between tours of some of the historic landmarks of that history-rich area and speeches on subjects ranging from "McIntire and the Federal Style" to the current Federal highway program. James Parton, editor of *American Heritage*, was there to give some fantastic evidence on the current boom in things historical, and at one panel session Architect Samuel Wilson Jr. gave an illustrated talk on achievements in the restoration of the Vieux Carré.

In the meetings and informal discussions it was clear that the National Trust is in more than one sense standing where brook and river meet. Perhaps its greatest organizational strength so far has come from members chiefly interested in specific historical properties

and the philanthropists who can make their preservation possible; but the Trust has moved steadily toward the broader goals of "a well-rounded program of scientific study, protection, restoration, maintenance and interpretation of sites, buildings and objects significant in American history and culture," and the expanded program for the future proposed in the report of the Committee on Planning would still further stress the educational side of the Trust's twofold mission of education and preservation. The Federal urban renewal and highway programs give the field of preservation entirely new dimensions and tempo, and the Trust is already being asked to consult on the problems they create. An important tool in this activity is the "Criteria for Evaluating Historic Sites and Build-

ings," established in 1948 and revised last year. The Criteria stress cultural as well as historical and give full recognition to architectural significance.

The National Trust was chartered by Congress in 1949 (two years after it was organized) as a private voluntary agency to supplement the work of the National Park Service in historical preservation. Supported entirely by (tax-exempt) contributions, it has grown to a membership of 2118 individuals and 234 organizations, among them the American Institute of Architects, whose collaboration the Trust values and seeks. Individual architect members number about sixty. The headquarters staff in Washington (at 2000 K Street N.W.) is headed — since last year — by President Richard Hubbard Howland, former head of the Department of Fine Arts at Johns Hopkins University. David E. Finley, former director of the National Gallery and chairman of the National Fine Arts Commission, has been chairman of the Board of Trustees from the beginning.

### THE A.I.A. AND PRESERVATION

*Activities of the American Institute of Architects in the preservation field are conducted by its Committee on Preservation of Historic Buildings, headed by Earl H. Reed, F.A.I.A., of Chicago, as chairman. At the RECORD's request, Mr. Reed has prepared the following statement describing the committee's work.*

The National Preservation Program was authorized by the Institute in 1951 to meet the menace of destruction and mutilation faced everywhere by our historic buildings. The Committee on Preservation of Historic Buildings developed and administers it, in close cooperation with the National Park Service, the National Trust for Historic Preservation and the Society of Architectural Historians, with the object of fully recording and protecting our historic buildings through education of the public and profession in advance of menace.

Viollet-le-Duc well stated historic building values as "lasting memories of the faith, the patriotism and the social customs of our forefathers." But our committee carries forward to the present. While centering our attention on structures dating from 1855 to 1900, we also supplement and correct previous records of the Historic American Buildings Survey and add later significant structures after 1900 as identifiable — works by Sullivan, Saarinen and Wright

have received our attention.

The more than 100 Preservation Officers in the chapter areas conduct the National Inventory, identifying and characterizing historic buildings. They also assist in preserving them, encourage educational programs and publicity, furnish preservation information and prepare H.A.B.S. records when possible. Completed Inventory forms are deposited in the Library of Congress, with copies to NPS, the National Trust, the Octagon and to local safekeeping in libraries of historical societies; completed forms now total about 1200. Virginia, subsidized by the Old Dominion Foundation through the National Trust, leads with 461 forms, with New York second, largely due to the activity of the Municipal Art Society of New York City; Rhode Island, Connecticut, Michigan and Illinois follow in that order. Special projects are under way in Philadelphia and St. Louis. Great benefits to scholarship and preservation are expected through this continuous national listing.

Though concern for historic buildings is mounting, destruction continues alarmingly. We hope our efforts, with those of our colleagues in the National Park Service, the National Trust and the Society of Architectural Historians, will increase public appreciation — and thus preserve our national heritage for posterity.

(More news on page 181)



Corridor of Lincoln Elementary School, South Haven, Michigan



# KILNOISE *Acoustic Plaster*

specified for  
Lincoln  
Elementary  
School by



*Warren S. Holmes Company*

GORDON H. STOW A.I.A.  
WARREN S. HOLMES CO., ARCHITECTS  
LANSING, MICHIGAN

With so many beautiful modern schools changing the architectural face of our countryside, more emphasis than ever is being placed on the *physical* well-being of pupils . . . KILNOISE Acoustic Plaster is a good case in point because it is completely fireproof *and* fire-retardant.

Other KILNOISE features also directly benefit our nation's school children. Higher sound-absorption largely eliminates harsh, distracting noise. Greater light reflectivity, protects young eyesight. In addition, the soft, unbroken surfaces of KILNOISE adds esthetic appeal.

On all counts, KILNOISE Acoustic Plaster will fulfill your most rigid specifications. *Tiger Brands, Basic Incorporated, Hanna Building, Cleveland 15, Ohio.*

THE BEST ACOUSTICAL  
MATERIAL IS  
**Plaster...**  
AND THE BEST  
ACOUSTIC PLASTER IS  
**Kilnoise**



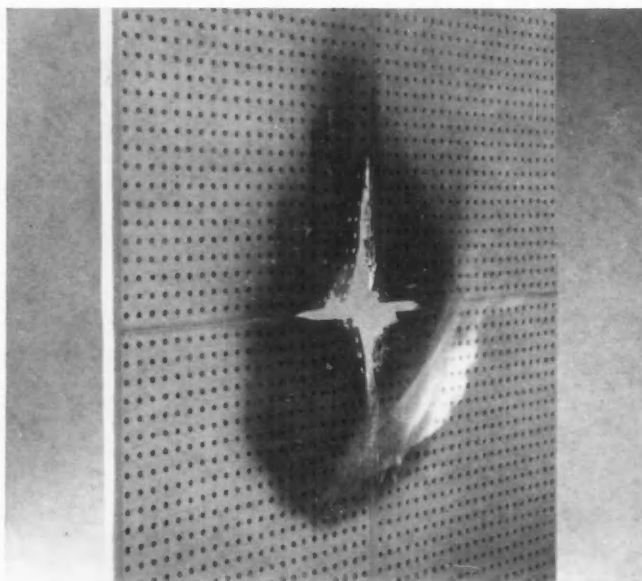
## Is Your Acoustic Treatment Fireproof? With Kilnoise, it will be!

Rigidly controlled fire tests by the Thompson & Lichtner Company laboratories prove that KILNOISE is incombustible as required by Federal Specification SS-A-118a, and effectively protects against flame penetration.

Because all-mineral KILNOISE Acoustic Plaster is monolithic, there are no joints for flames to penetrate.

The complete fireproof and fire-retardant qualities of KILNOISE, combined with its high sound-absorption and light reflection qualities provide the ideal acoustic application for both ceilings and walls.

Another important thought: fire insurance rates are lower when fireproof KILNOISE is specified!



THE BEST ACOUSTICAL  
MATERIAL IS  
Plaster . . .

AND THE BEST  
ACOUSTIC PLASTER IS

# KILNOISE®

**ACOUSTIC PLASTER**

*Tiger Brands, Basic Incorporated, Cleveland 15, Ohio*

Don't Overlook These Other KILNOISE Features!



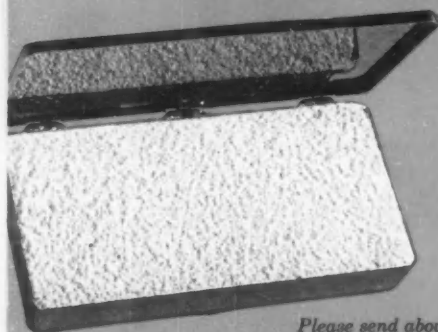
**Increased Sound-Absorption**—Many thousands of tiny interconnected pores render KILNOISE highly sound-absorbent. Stippling and random-perforating the surface provide a high noise reduction coefficient of .60.

**Higher Moisture Resistance**—Wherever humidity is high, other materials may crumble, rust, stain or warp. But KILNOISE is impervious to moisture, making it the ideal ceiling for swimming pools, bathrooms, laundries, shower rooms and other high humidity areas.

**Maintenance**—KILNOISE acoustic plaster sets monolithically with a hard, durable surface which can be painted (with a water base paint) repeatedly *without materially reducing its sound-absorption qualities!* This surface can be kept constantly attractive by quick, easy cleaning.

**More Light Reflectivity**—KILNOISE provides light reflection excelling that of most other acoustical materials. This furnishes an extra margin of safety where proper lighting has become an increasingly important factor.

**Pleasing Appearance**—KILNOISE is a crackless plaster with an interesting, pleasing texture which can be further heightened by relief designs, impressed in the plaster. KILNOISE is fast finding favor with architects for residential applications where appearance is perhaps a more vital factor than in commercial applications.



Please send above  
KILNOISE sample and full information  
at no obligation

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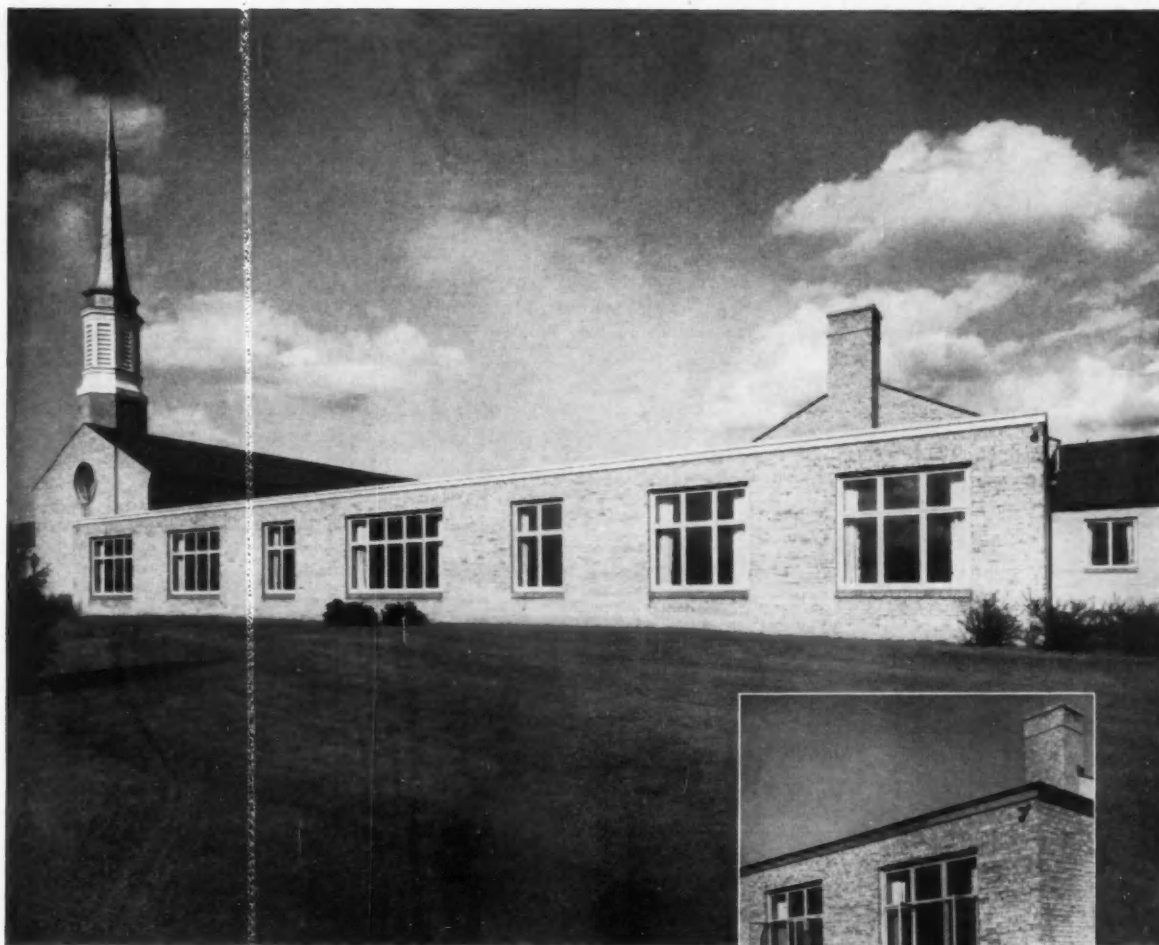
## KILNOISE

*Tiger Brands*

Box 33

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Cleveland 15, Ohio

A.I.A. File No. 39-B



First Baptist Church, Rochester, New York, Architect: Martin, McGraw, and Wiard.

*Four different combinations of PELLA 24" x 24" fixed and 48" x 24" ventilating casement units are used effectively here to accent the over-all design of this unadorned elevation.*



Wood Casement units up to...

68" **HIGH, 24" WIDE** AND SO **HANDSOME**

There is a good reason why PELLA offers the *only* wood casements with glass sizes as large as 24" wide x 68" high.

Butt plates of sash hinges are *riveted* to the inner rigid steel frame that reinforces the sturdy wood lining. Extra long hinge wings give extra bracing to sash.

PELLA WOOD CASEMENTS are equipped with ROLSCREENS... the inside screens that roll up and down like a window shade. Specify either PELLA Dual

Glazing Panels or insulating glass. Both eliminate "storm window nuisance" and protect against cold, heat and street noises.

See our catalog in Sweet's or fill in and mail coupon today.



**WOOD CASEMENT WINDOWS**

**ROLSCREEN COMPANY, Pella, Iowa**

Dept. 1-134

Please send helpful 20-page book, "Library of Window Ideas."

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ATTENTION MR. \_\_\_\_\_

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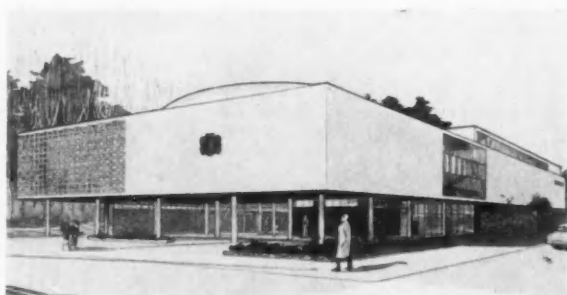


NEW ZEALAND HOLDS FIRST ARCHITECTURAL "CONVENTION" AND EXHIBIT

The New Zealand Institute of Architects, which has been holding annual conferences attended by its own members for the last 50 years, this year held its first "convention." The term was used, as a departure from normal practice, to recognize a special effort "to follow overseas trends and widen the scope of the normal conference program to include as many public functions as possible." The aim was "to bring New Zealand's architects as a profession into closer contact with members of the com-

munity; to invite them to join in the convention to see and hear about modern trends in architecture, both at home and abroad." The convention, held in Auckland, had as its official guest and principal speaker Architect Harry Seidler of Australia; it had a series of symposiums on such subjects as "The Architect's Role in Building Projects"; "The Artist in an Architectural Age"; "Architecture of the Air Age"; "Soil Mechanics and Building Foundations"; and "Some Auckland Shapes and Spaces."

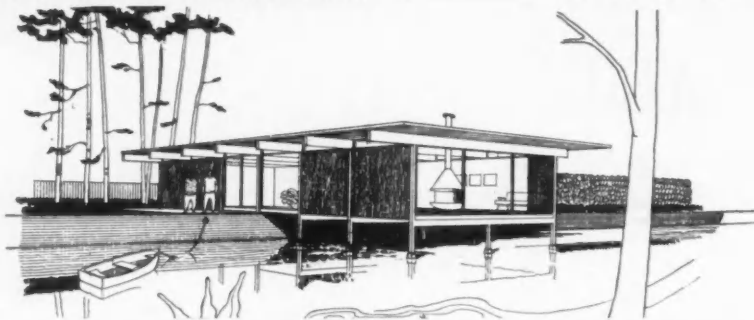
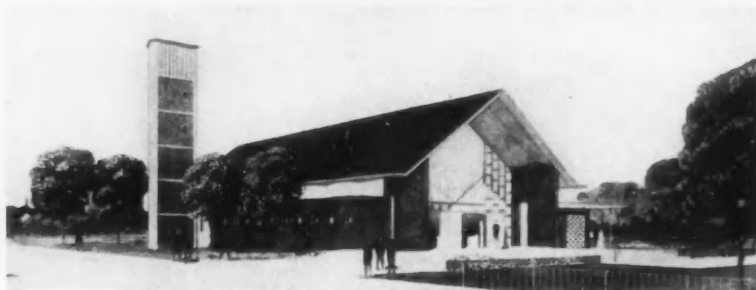
It also had a number of exhibitions, including the first in Auckland to be devoted solely to architecture and building and the largest ever held in New Zealand; focal point was the full-scale house designed by Mark Brown and Fairhead, Architects, and built in the Town Hall "to display to the public some of those materials, products and techniques . . . which are in use in New Zealand now or which we believe will become an integral part of New Zealand building in the near future."



1, 2

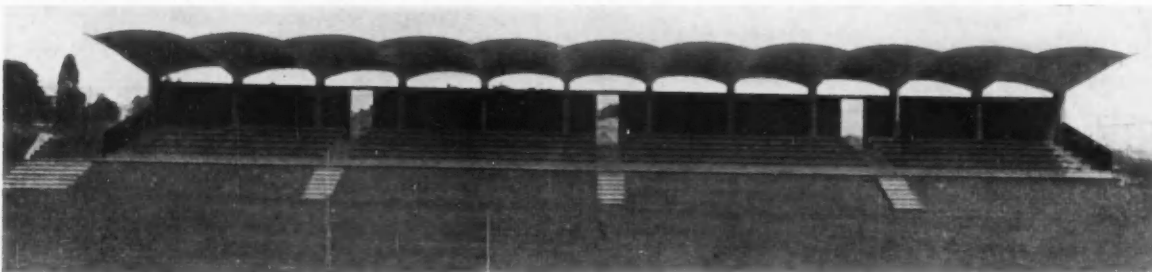


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5

**NEW ZEALAND ARCHITECTURE**  
1. Wanganui War Memorial, prize-winning design by Greenough, Smith and Newman, architects. 2. Takapuna Grammar School Memorial Library; Massey, Beaton, Rix-Trott, Carter and Co., architects. 3. House at North Shore; Group Architects. 4. All Saints' Church; R. H. Toy, Architect. 5. Exhibition House; Mark Brown and Fairhead, architects. 6. Sports pavilion for Mt. Albert Grammar School; R. H. Toy, architect

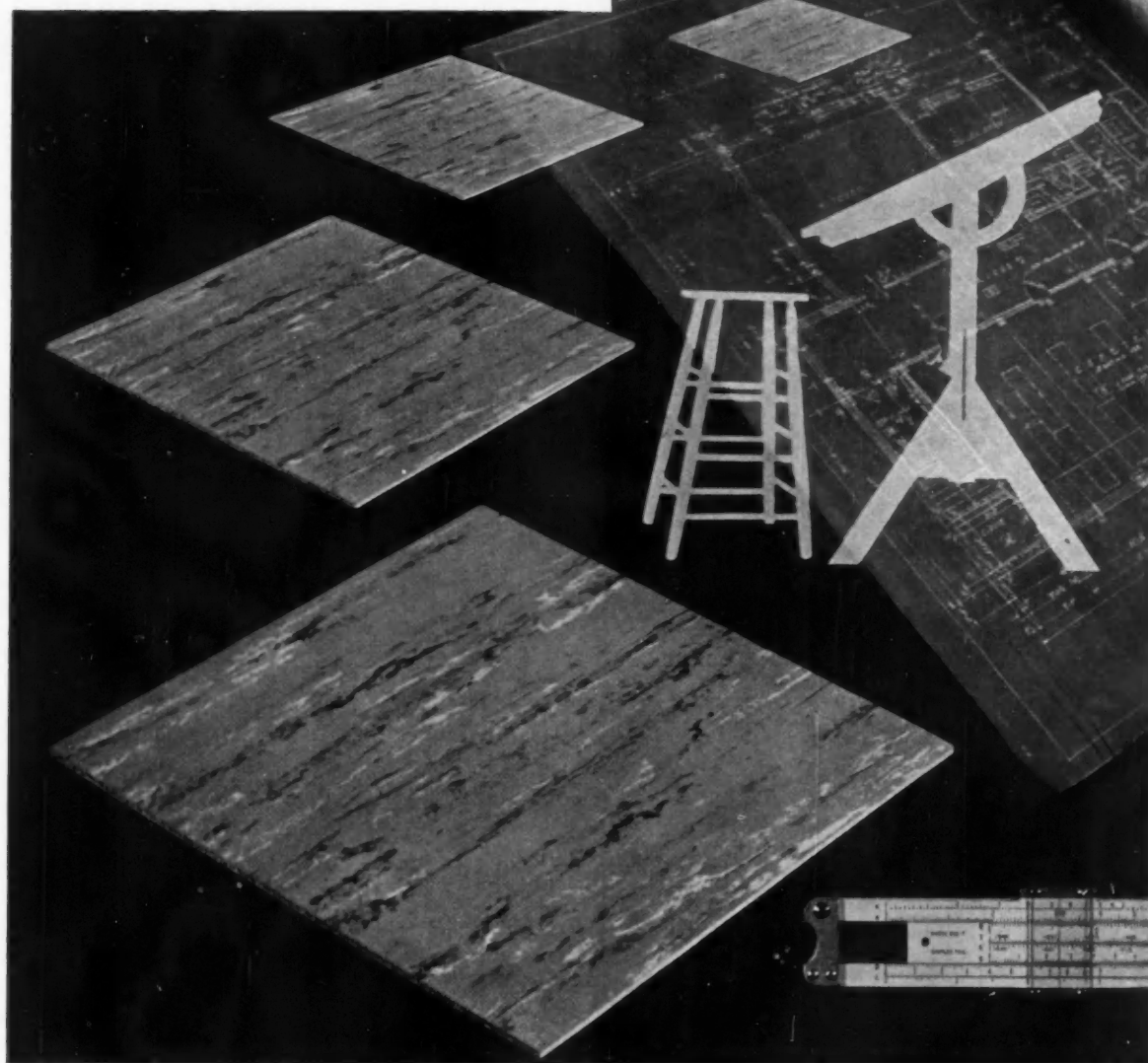


6

(More news on page 21)



Today's smartest floors wear KENTILE



## This is New KENTILE® Asphalt Tile

So decidedly improved it makes other asphalt tile seem old-fashioned! Gives you a finer, smoother surface--greater light reflectance --and brighter colors than ever before!

## KENTILE FLOORS

available in Asphalt tile, Vinyl Asbestos, Solid Vinyl, Cushion-back Vinyl, Rubber and Cork tile... over 150 decorator colors!

### SPECIFICATIONS:

SIZE: 9" x 9"

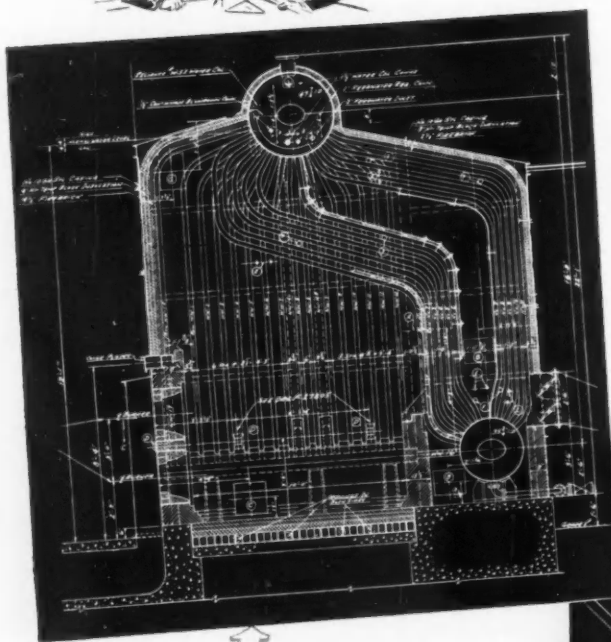
THICKNESSES:  
1/8"; 3/16" for extra-heavy commercial duty (marbleized only)

COLORS:  
Marbleized -- 21  
Carnival -- 16  
Corktone -- 4  
New Random Tones in green, gray, and rose.

APPLICATION:  
Can be installed on any smooth interior surface, even concrete in contact with the earth.



# Industry Approved



## CLASS VF

A 22,000 pounds steam per hour unit installed at Indiana Farm Bureau Refinery, Mt. Vernon, Ind.

## CLASS VS

The Seelbach Hotel, Louisville, Ky. is served by this 30,000 pounds steam per hour boiler.

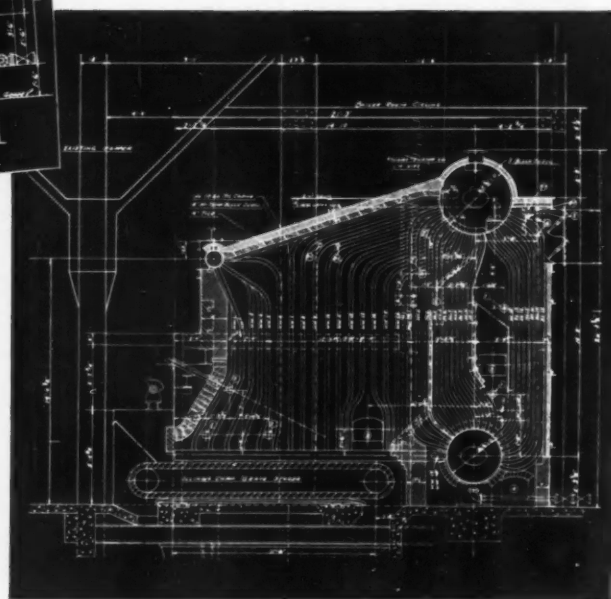
A wide variety of industrial plants and other users of steam for power, processing, or heating have found these efficient Vogt Two-Drum Type Boilers to be the answer to their diverse steam generating requirements.

Class VF units provide maximum capacity in limited floor space and head room, while Class VS is best adapted to installations not having such restrictions. Each has a large furnace volume and a high ratio of radiant heating surface. The furnace design assures proper combustion of fuels fired in suspension or with various type of stokers.

*A bulletin with general information and showing typical installations is available on request.*

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# Two-Drum STEAM GENERATORS by **Vogt**



## Typical Users...

**FOOD PROCESSING PLANTS**

**DISTILLERIES • HOTELS**

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**PETROLEUM REFINERIES**

## HENRY VOGT MACHINE CO., Louisville 10, Kentucky

BRANCH OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO, ST. LOUIS, DALLAS, CHARLESTON, W. VA.

**The State of Construction**

Dollar volume of contracts for future construction in the U. S., at \$2,624,938, showed a two per cent increase in September over the same month last year, F. W. Dodge Corporation reported. Residential was up ten per cent and non-residential one per cent. Further details: page 328.

**BRI Elects**

Charles H. Topping, senior architectural and civil consultant for E. I. du Pont de Nemours and Company, Wilmington, has been named president of the Building Research Institute. Mr. Topping, who was vice president and chairman of the Membership Committee, succeeded Edmund Claxton, director of research for the Armstrong Cork Company, Lancaster, Pa., who served two terms as BRI president. Harold L. Humes, vice president of the Baldwin-Hill Company, Trenton, N. J., is the new vice president. In a staff appointment announced last month by BRI Executive Director William H. Scheick, Milton C. Coon Jr. has been named secretary of BRI.

**Competitions**

The Architectural League of New York announces its 1958 **National Gold**

**Medal Exhibition**, to be held March 20-April 11 at the League building, 115 East 40th Street, New York City. Gold and Silver Medals are awarded to the top entries in each of the six categories in this competitive exhibition, the only nationwide competition including architecture and the allied arts and the oldest national architectural competition. Participation is open to all U. S. citizens; it is not restricted to League members. Professional juries in the six fields — architecture, mural decoration, design and craftsmanship, sculpture, landscape architecture and engineering — will select the material for the exhibition and award the medals. Preliminary submissions are due January 15. Inquiries should be directed to: Maurice Gauthier, Chairman, 1958 Gold Medal Exhibition, Architectural League of New York, 115 East 40th Street, New York 16, New York.

... The deadline for nominations for the 1958 **R. S. Reynolds Memorial Award** has been extended to January 15. To be considered for the \$25,000 award established last year by the Reynolds Metals Company, an architect must be nominated by either a chapter of the A.I.A., or any architects' society or group outside the U. S., or any college or university. Special programs with

details of nomination procedure have been sent to these groups by the A.I.A., which administers the award for Reynolds. The award is for the architect making "the most significant contribution to the use of aluminum in the building field" in the specific structure or structures (not necessarily buildings) submitted. ... Applications are due December 31 in the 1958 Architectural Competition sponsored by **Indianapolis Home Show Inc.** The competition, calling for a design for "a midwestern suburban house" for a family of four, is open to architects, architectural designers, draftsmen and students in recognized schools of architecture without geographical limitation. Prizes: \$1000, \$500, \$200 and (six honorable mentions) \$50. For information: Architectural Adviser Richard C. Lennox, A.I.A., Indianapolis Home Show Inc., 1456 North Delaware Street, Indianapolis 2, Indiana. ... **MARS Pencils** is sponsoring its second annual design contest "to provide a 'showcase' for worthwhile projects which often, in spite of merit, do not come before interested technical audiences" — and to find material for the MARS Outstanding Design Series of advertisements. Winners — there were four in 1957 — receive \$100; submissions, to be judged "on the basis of appeal to design-minded readers, broad interest, attractive presentation," can be designs for almost anything — from machines to space ships to buildings. Query: J. S. Staedtler, Inc., Hackensack, N. J. ... Announcement has been made of the **James F. Lincoln Arc Welding Foundation's** annual mechanical and structural design competition for engineering undergraduates. A total of \$6750 in cash awards is offered for the best designs of a machine, machine part, structure or structural component which makes a significant use of welding. Closing date is July 1, 1958. Rules are available from the James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio.

**Honors**

**Modular Awards** of the American Standards Association for 1957 were presented at last month's National Conference of the American Standards Association in San Francisco. Recipients: Neil Boldrick, Acme Brick Company, "for leadership resulting in widespread production of modular clay products"; William Demarest, director of Plastics

(Continued on page 24)



— Drawn for the RECORD by Alan Dunn

"How about a cocktail lounge — where people who have gone through the museum can unwind?"



**Classic Gothic beauty.** The foundation stone of the National Cathedral of St. Peter and St. Paul, Washington, D.C., was laid in 1907. Construction has been going on ever since. When completed, the great structure will

be the world's sixth largest cathedral. Architect: Philip Hubert Frohman. General contractor: George A. Fuller Company. Monel roofing contractor: J. Edward Linck Sheet Metal Works, Washington.

*On world's sixth largest cathedral:*

## Monel...for trouble-free roofing

**This is Washington Cathedral...** a picture in stone and glass and Monel® nickel-copper alloy.

Almost fifty years in building... yet not quite half completed. Obviously, what becomes part of this beautiful Gothic structure must be as impervious as possible to the ravages of time and weather.

**That's why Monel** nickel-copper alloy was specified in 1941 for the permanent roofs and drainage systems. For flat, standing and batten seam roofing... for flashings and gutters.

45,000 pounds of Monel Roofing Sheet already applied...

The reasons behind its use? Monel

sheet is stronger and tougher than structural steel. It cannot rust. Wear and abrasion, or extremes of heat and cold, do not faze it. Truly a "life-of-the-building" roofing metal!

**Write Monel nickel-copper alloy** into your specifications for all types of buildings. Factories. Schools. Laboratories. Churches. Institutions.

**And send for** your free copy of *Basic Application Data—Monel Roofing Sheet*. Booklet contains full information on the cost of Monel sheet, its uses, characteristics and properties. It also lists suggested gauges of Monel Roofing Sheet and includes helpful data on how to specify. Write for your copy today.



**Easy to work.** Installing Monel batten seam roof on a chapel of Washington Cathedral. Monel nickel-copper alloy is as easy to work as other roofing metals.

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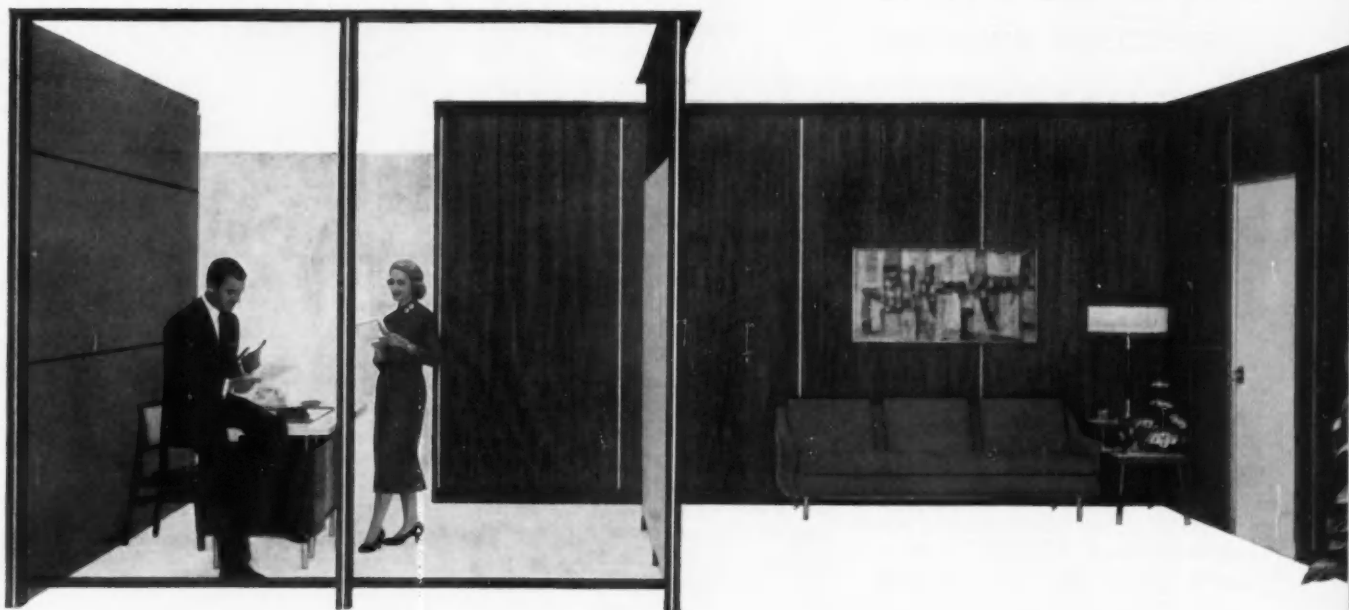
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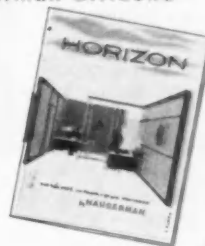
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## THE RECORD REPORTS

### MEETINGS AND MISCELLANY

(Continued from page 21)

in Construction for the Manufacturing Chemists Association and, as former Secretary for Modular Coordination of the American Institute of Architects, responsible "for a widespread dissemination of knowledge concerning the constructional advantages and economies inherent in the application of its principles"; John R. Magney, partner of Magney, Tusler and Setter, Architects, Minneapolis, for "his early adoption, application and promotion of the principles of modular measure in architectural design"; Andrew Place, home builder, South Bend, Ind., for his application of modular coordination to construction procedures; and P. I. Prentice, editor and publisher, *House and Home* magazine. . . . James R. Lamantia of New Orleans was architect of the 20th Century Shop, New Orleans, which received the First Award among individual shops in the store design category of this year's edition of the annual **Merchandising Achievement Awards** sponsored by *The Gift and Art Buyer* magazine. . . . Arthur J. Benline, technical director of the New York State Building Code Commission, has been announced as the recipient of the 1957 **Sidney L. Strauss Memorial Award**, "in recognition of his past outstanding service for the benefit of the architectural profession." Presentation will be made at the annual dinner of the New York Society of Architects at the Hotel Commodore in New York December 12. . . . Award winners in *Institutions Magazine's* fourth annual **Institutions Interiors Awards** program included architects Mario Gaidano of San Francisco, Victor Gruen Associates of Beverly Hills, Thornton Ladd and Associates of Pasadena, George Vernon Russell of Los Angeles, Harper & Kemp of Dallas and Welton Becket and Associates of Los Angeles.

#### News from the Campus

Prof. Rudard A. Jones has been named director of the **University of Illinois Small Homes Council**. Professor Jones, who has been assistant director since 1951, succeeds Prof. James T. Lendrum, who resigned to become head of the Department of Architecture at the University of Florida (AR, Nov. 1957, page 28). . . . Kenneth Alexander Smith has been appointed assistant dean of the School of Architecture at **Columbia University**. Mr. Smith, a licensed professional engineer, has been head of the

Construction Department of the School since 1935. Also at Columbia, Jan Hird Pokorny, New York City architect, has been named Associate in Architecture to be in charge of evening classes at Columbia, replacing Bruno Funaro, who died in August. . . . The Department of Architecture at the **University of Notre Dame**, in cooperation with the Civic Design Committee of the Indiana Society of Architects, has been sponsoring this semester an Urban Planning Seminar, a series of lectures open free to the public. Beginning with an introductory lecture which emphasized the role of the architect and the civil engineer in city planning and urban renewal, the series has covered such general topics as zoning, the master plan and its elements and urban design as well as more specific regional problems such as "The St. Lawrence Seaway and Mid-America" and "The Chicago Metropolitan Complex—Present and Future." Final lectures in the series, "Metropolitan Planning" and "A Comprehensive Planning Program for a Large American City," will be held December 6 and January 10. . . . The **University of California** (northern area) is this year offering an extension program in architecture whose objective is "to provide architects with information concerning new trends and developments pertaining to their field and to acquaint interested laymen and those of related professions with the scope and content of contemporary architectural practice." . . . Applications will be received till February 14 for 1958-59 fellowships, scholarships and assistantships offered by the Graduate

Division of the College of Architecture of **Cornell University** for graduate studies in architecture, landscape architecture, city and regional planning, painting and sculpture. For information address: Dean Thomas W. Mackesey, College of Architecture, Cornell University. . . . The appointment of Charles M. Kelley of Montgomery as Head Professor of Architecture at the **Auburn Polytechnic Institute** has been announced by Dean Sam T. Hurst of the School of Architecture and Fine Arts. Mr. Kelley, former junior partner in the Montgomery firm of Sherlock, Smith and Adams, has been professor of Architecture at Auburn for the last year. In announcing the appointment, Dean Hurst noted that it completed the school's administrative team: "We move ahead toward a stronger program, not only in architecture, but in building technology, art, music and dramatic arts as well. Each of these programs will enrich the other and, properly coordinated, will raise the quality of our student product. Further, we hope to bring architecture and the arts closer to all our people. The nature of the architect's services and his particular contributions are not yet fully understood at the grass roots. Art as expression and communication has always been a common denominator in the cultural advance of man. To be so it requires not only his passive enjoyment but his active participation in creative work. Through exhibits, clinics, traveling productions and faculty activity at all levels, we shall work to share the resources of our school with the community and the region."



#### NEW BUILDING FOR CHICAGO

Stainless steel and glass Inland Steel Building of Skidmore, Owings and Merrill nears completion, already a landmark, at Dearborn and Monroe in Chicago



#### NEW BUILDING FOR NEW YORK

Bronze and glass House of Seagram's of Mies van der Rohe and Philip Johnson also nears completion, also a landmark, at Park and Fifty-fourth in New York

(More news on page 28)



The National Biscuit Company has selected MILLS MOVABLE PARTITIONS for its new General Office at 425 Park Avenue, New York. Occupying six stories, these offices contain 6000 lineal feet of MILLS MOVABLE PARTITIONS. At the left are photographs of the offices showing the versatility and adaptability of the partitions. Write for catalog: The Mills Company 929 Wayside Road Cleveland 10, Ohio.

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**Heating of each room is controlled by occupant**  
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"We have experienced sub-zero temperature with high winds. Our office has been held at an ideal temperature, with almost no variation up or down. We now consider this SelectTemp system the most marvelous and satisfactory heating installation we have ever seen, and expect to specify it in many of our own jobs."

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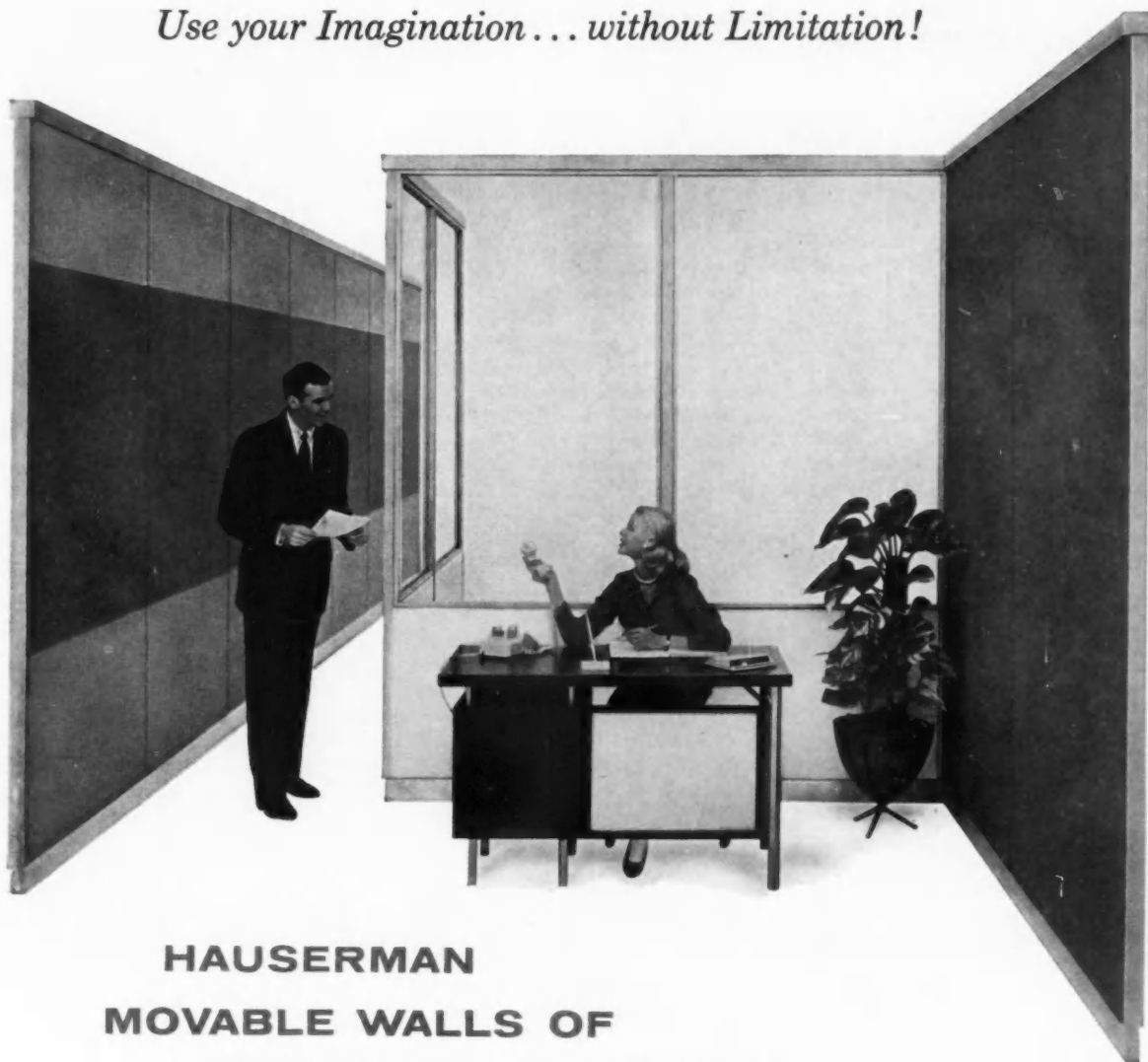


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Watch Reynolds all-family show "DISNEYLAND", ABC-TV

## THE RECORD REPORTS

### MEETINGS AND MISCELLANY

(Continued from page 24)

#### CHICAGO DYNAMIC: U. S. STEEL SELLS ARCHITECTURE

What was undoubtedly the biggest architectural promotion of all time was put on as "Chicago Dynamic" October 27–November 2 by the United States Steel Corporation. With the objective of dramatizing the significance of steel in the past, present and future of architecture, Big Steel sparked the formation of a committee of Chicago civic leaders to sponsor "a series of events dramatizing Chicago's architectural heritage in a billion-dollar building renaissance," with natural emphasis on the potential of "walls of steel" for its achievement. The result was probably more public consciousness of architecture than one long week has ever before produced.

Chicago was chosen for the promotion as "the birthplace of American architecture" and two of its most famous non-native sons were back for the celebration — Frank Lloyd Wright, predicting the coming downfall of the city, and Carl Sandburg, saying, "I see a degree of vision and will that I believe cannot fail of good results."

Chicago Dynamic Week — so officially proclaimed by the Mayor — opened with a tour of historic buildings and erection of commemorative plaques on six of them — The Rookery (Burnham & Root); the Monadnock Building (Sullivan); Sears Roebuck, State Street (Jenny & Mundie); the Auditorium (Adler &

Sullivan); Carson Pirie Scott (Sullivan) and the former Reliance Building (Burnham & Root), now 32 North State Street.

It must have been almost impossible to turn on TV or radio all week without encountering a Frank Lloyd Wright or Carl Sandburg interview or talk; but the big TV event was the spectacular featuring a half-hour "picture-story on modern architecture" narrated by George Danforth, followed by a half-hour conversation between Frank Lloyd Wright and Sandburg "guided" by Alistair Cooke: this found Wright reproaching steelmen for using steel like lumber: "steel is the spider, spinning," not "wooden beams" and "wallpaper."

Major events of the week were the steel curtain wall workshop for which panelists were the architects of six steel curtain wall buildings now under construction in Chicago; the Chicago Dynamic Forum on "Business, Architecture, Technology and the Individual" — "Production is controlling consumption," Wright said; and Moderator Cooke got tortuous answers to his question, "In building, do people dictate what they get or do they take what somebody offers them?" — and finally, the "Climax Dinner" at which Sandburg read a new Chicago poem commissioned especially for Chicago Dynamic. And recalled, in



#### WALLS OF STEEL

Composite photo of renderings of five buildings, now under construction in Chicago, chosen to dramatize steel's contribution to future Chicago. Left, top to bottom: The Executive House (apartment hotel) — Milton M. Schwartz & Associates, Architect; Morton Salt Company Office Building — Graham, Anderson, Probst & White, Architect; Salvation Army Headquarters — Skadberg-Olson, Architect. Right, top to bottom: Mutual Trust Life Insurance Company Building — Perkins & Will, Architect; Borg-Warner Corporation Building — A. Epstein & Sons, Architect

the course of a speech that was poetry even where it was prose, his older lines:

Man the stumbler and finder, goes on,  
man the dreamer of deep dreams,  
man the shaper and the maker,  
man the answerer.

**IMMUTABLE** Frank Lloyd Wright ("I am distinctly a minority report") with "business and architecture" panel (below); Otto L. Nelson, vice president — housing, New York Life; Ira J. Bach, Chicago's Commissioner of Planning; Theodore V. Houser, Board chairman, Sears Roebuck and Company; and Arthur Rubloff, Chicago realtor; and (at right) with Alistair Cooke, commentator, and that other lion of Chicago Dynamic (and the American scene) Carl Sandburg. Bottom left: demonstrations of a cold roll forming Yoder mill (foreground) and

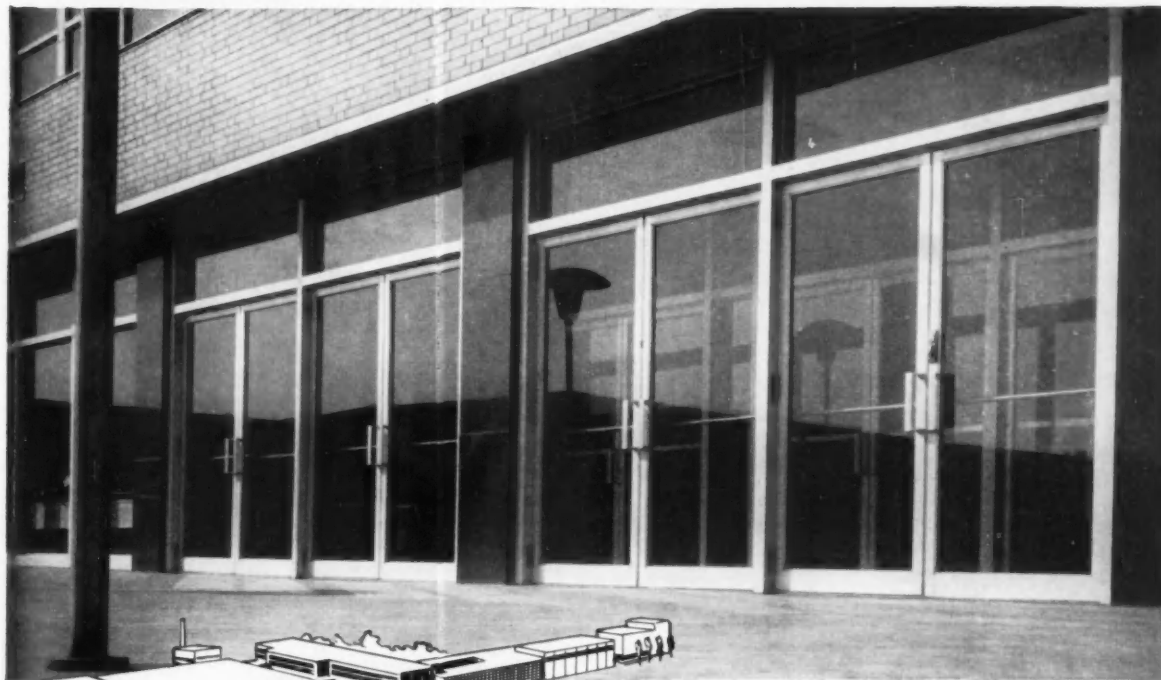
Vernon Allsteel press brake (barely visible in background) by Milton Male (left) of U. S. Steel, to steel curtain wall workshop panelists, architects of steel curtain wall buildings under construction in Chicago — Leif Skadberg, Milton M. Schwartz, Lawrence Amsledter (A. Epstein & Sons), L. R. Solomon, Victor L. Charn (Graham, Anderson, Probst & White) and John E. Starrett (Perkins & Will). Right: George Danforth, workshop moderator and chairman, Department of Architecture, Western Reserve University



(More news on page 32)

**RIXSON**

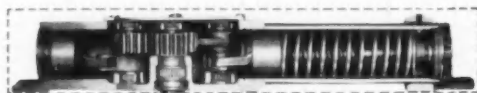
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Outstanding example of cooperative planning, famed Paul Laurence Dunbar Vocational High School, Chicago Public Schools. Holabird and Root and Burgee, architects, Chicago.

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*for shallow head jambs like these!*



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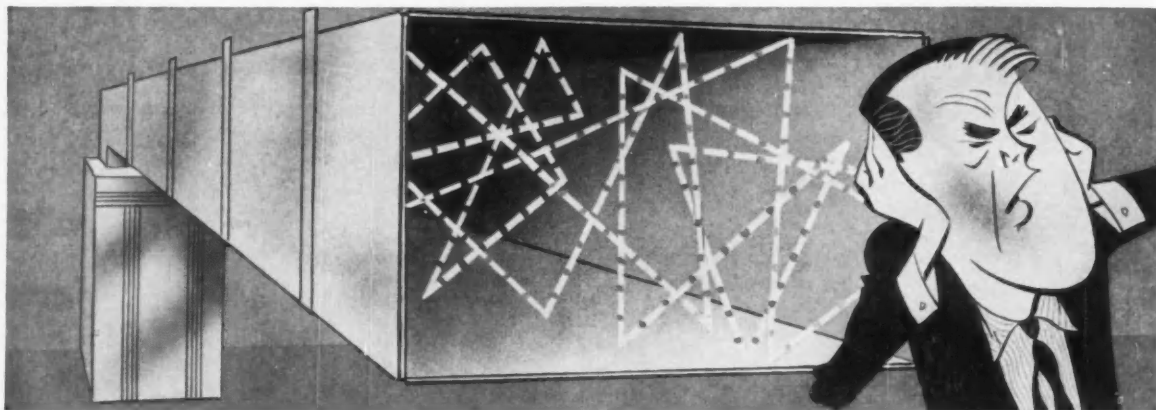
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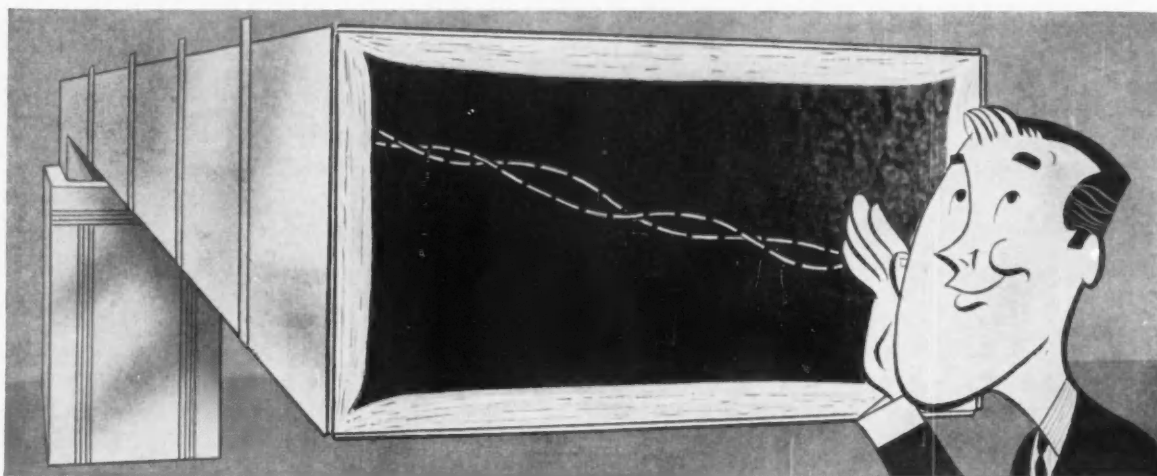
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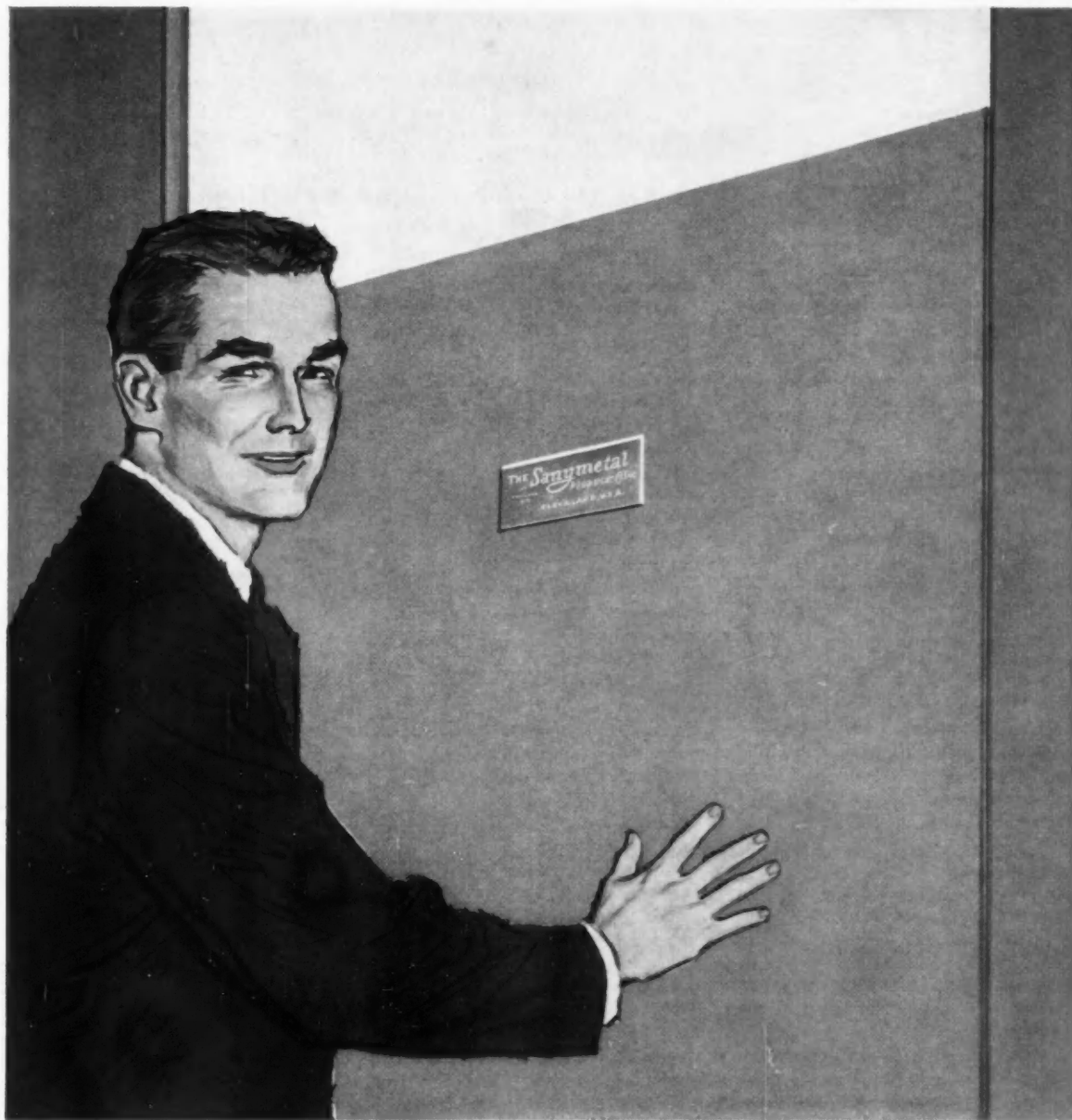
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## INDUSTRY ADVICE SOUGHT AND USED IN FHA STANDARDS REVISION

If anyone legitimately concerned with the new Minimum Property Standards to be made effective by the Federal Housing Administration after the first of the year has not seen the proposed drafts, it is not FHA's fault. Here is one real effort at the Federal level, uniquely thorough, it must be said, to consult the affected industry as widely as possible before issuing regulations affecting it.

Every move in the monstrous task of revising FHA's multiple manuals on its housing requirements — scattered in nearly 30 regional versions — has been directed down cooperative channels. Representatives of the many-faceted home building industry from its suppliers to its finished product salesmen have been doing more than looking over the agency's shoulder as the experts have gone about the task of updating and simplifying these guides to house construction — guides that spell eligibility for FHA home loan insurance.

The effort began with the appointment of an eight-member industry committee which included 5 architects. In its many conferences with FHA's Architectural Standards Division director, Neil Connor, and his staff, this point has been very clear: FHA had no intention of merely paying lip service to the idea of industry advice.

As the old and often ambiguous Minimum Property Requirements become the new Minimum Property Standards officially sometime after the first of the year, this committee group will be rounding out three years of intense effort directed toward better FHA housing for less money.

While this initial effort at revision, the first complete overhaul in FHA's 32 years of existence, is being done with deliberate thoroughness, it represents only the first thrust. Mr. Connor and his staff hope for re-issue of the Minimum Property Standards each two years, with updating as developments require. The biennial revisions will not, of course, be the monumental tasks that the current rewriting has become.

FHA has been disturbed by the fact that its minimum requirements for home

construction tend to become the maximum. There is little doubt, however, that the better built and better equipped unit now is receiving deserved recognition in cost determinations. The new standards should help in that they contain considerably more flexibility than the present MPR's.

With a third draft completed in two major stages on the 13 chapters of the new single-volume MPS, FHA made a determined effort to place its product in the hands of interested persons. The American Institute of Architects was consulted and sent copies for review to members of its home building committee. The responses received from a portion of those surveyed lauded the FHA effort and contained some comment on detail. These responses will be given due consideration along with other industry observations in the final decisions concerning the standards.

Largest industry segment to be affected is, of course, the home builder. To make sure that as many builders as possible could study the third draft, FHA loaned the printing plates to the National Association of Home Builders, which, in turn, printed 2000 copies for distribution within its own organization. These were placed with all N.A.H.B. local chapters and it is considered that the 10,000 active builder members and 30,000 additional members of the organization now have been blanketed. The provisions are under study within the N.A.H.B. and a final comprehensive review of them will take place at the 1958 convention in Chicago next month. FHA is awaiting this final action by N.A.H.B. before making the new standards effective.

Meanwhile, copies of the draft have been circulated among other interested industry organizations as widely as possible. No legitimate request for a copy has been turned down. The Architectural Standards Division received 1000 copies from the Government Printing Office and had less than 200 left at this writing. Three hundred copies went to FHA and VA field offices. Some 500 others went to industry and other

### FHA'S INDUSTRY ADVISORY COMMITTEE

Edward Fickett, A.I.A., Los Angeles

Leonard Haeger, A.I.A., technical director for Builder William Levitt; former FHA research director and former N.A.H.B. research director

Harold D. Hauf, A.I.A., A.S.C.E., chairman, Building Research Advisory Board, dean of architecture, Rensselaer Polytechnic Institute, Troy, N. Y.

Irwin Jalonack, housing consultant; former technical director for Levitt

James T. Lendrum, A.I.A., head of architecture, University of Florida, Gainesville, Fla.; former director, Small Homes Council, University of Illinois

Andrew Place, homebuilder and N.A.H.B. Research Institute trustee

David Slipher, president of Webb and Knapp Communities; former assistant technical director for FHA; former head of construction for homebuilder Fritz Burns

Howard Vermilya, A.I.A., vice president, American Houses, Inc.; former FHA technical director

sources. A list of 166 trade associations and organizations received mailings. Alphabetically this list stretched from the Adhesive Manufacturers Association of America to the Wood Flooring Institute of America and touched every interested group in between. It is hoped and believed that virtually all product manufacturers supplying home items were reached through their trade associations.

In addition, organizations like the American Waterworks Association, Copper and Brass Research Association, Industry Committee on Interior Wiring Design, National Pest Control Association and the Underwriters' Laboratories, Inc., received copies. The distribution, in fact, could be called international, for two sets went to Canada: for the Central Mortgage and Housing Corporation, Ottawa, and the Canadian Adequate Wiring Bureau, Toronto.

Federal and state government units with a concern also received the draft. Still other groups studying the standards included the U. S. Chamber of Commerce, Southern Building Code Congress, Building Research Advisory Board, Mortgage Bankers Association, National Savings and Loan League, U. S. Savings and Loan League, and the American Bankers Association.

(More news on page 36)



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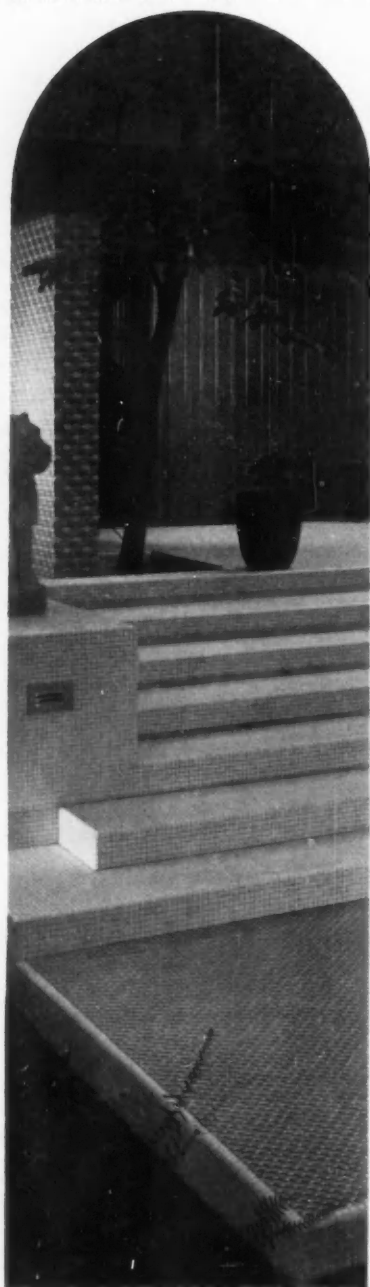


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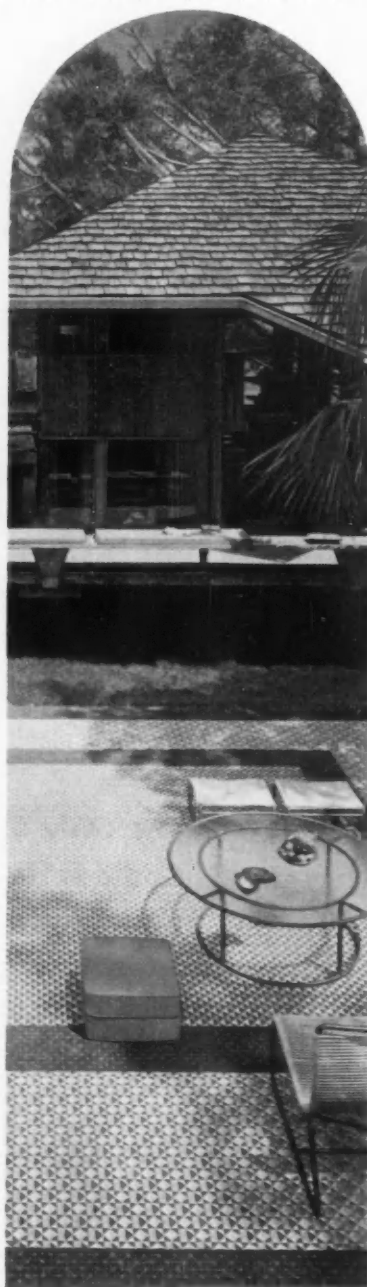


Plate No. 621



Plate No. 577

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Plate No. 620

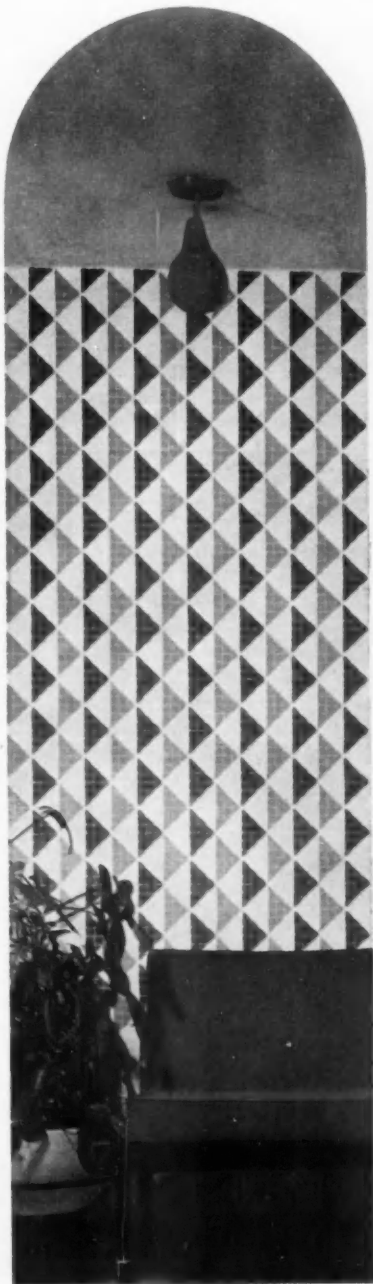


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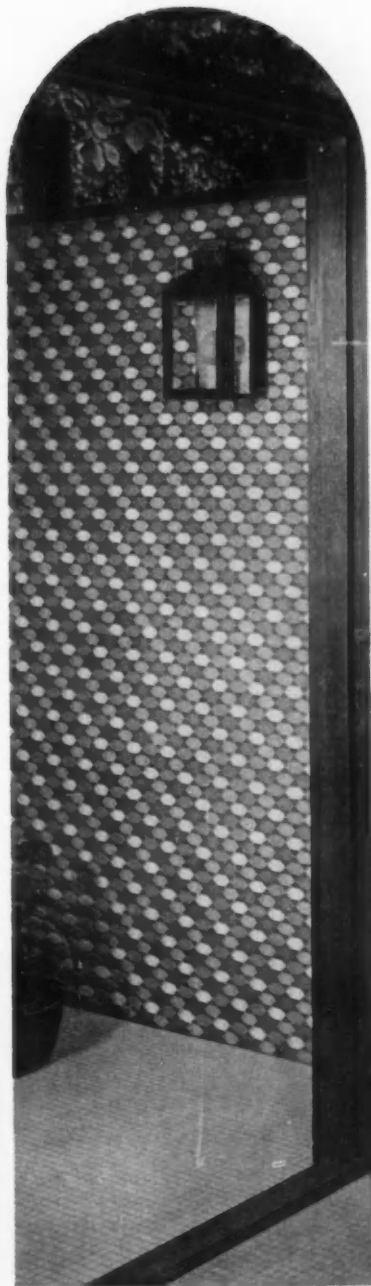


Plate No. 579

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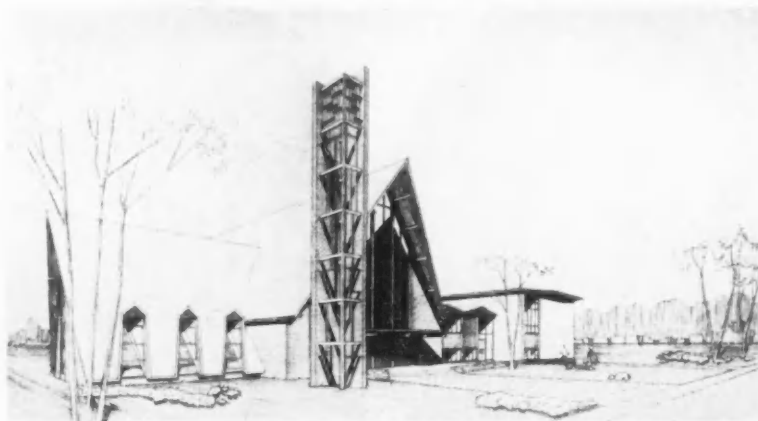
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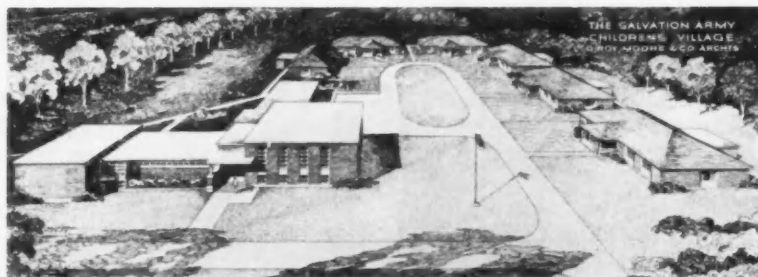
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A ROUNDUP OF NEW BUILDINGS AND CURRENT PROJECTS



Above: United Church, Cookville, Ont.; E. C. S. Cox, Architect. Project, to cost estimated \$325,000, includes church seating 520, chapel seating 40, free-standing bell tower, administration or office section and auditorium seating 400, to be used as part of Sunday School

Below: Salvation Army Children's Village, London, Ont.; O. Roy Moore and Company, London, Architects. Photograph shows a typical cottage; overall view is shown in perspective



Service headquarters for B.C. Electric's natural gas distribution system, Burnaby; design by B. C. Electric Engineer Company



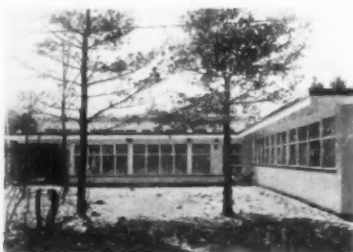
Imperial Oil Building, Toronto; Mathers & Haldenby, Architects. Offices are grouped around service core



Above: Kitsilano Towers apartments for Vancouver, B. C.; Robert C. Bennett Associates of Vancouver, Architects, W. K. Noppe, Associate Architect, Sanderson and Company, Consulting Engineers. This 15-story apartment building, for prominent site near Vancouver's Burrard Street Bridge, will have 140 suites

Below: Residence of Mr. and Mrs. Gabriel Gilbert, Quebec City; André Gilbert, Architect. Street façade of stone and cedar is

designed for privacy; window walls at rear look out on wooded lot. Foundation is slab on ground with one basement area



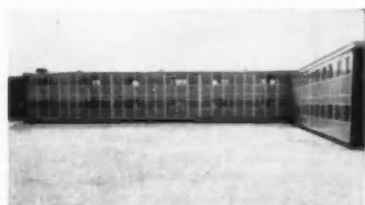
(Continued on page 40)



Workmen installing window walls made with Hasko-Struct<sup>†</sup> plastic laminated sandwich panels. Architect is Manson & Carver Associates, General Contractor is Christman Company.

## Styrofoam\* insulation chosen for housing project at Michigan State University

Class of '58 or '88—students will be assured of warm, dry rooms in this large, married students' housing project in East Lansing, Michigan. It's insu-



The new Michigan State University Married Students' Housing Project. There are 46 complete units housing 508 families.

lated with Styrofoam, a Dow plastic foam.

Styrofoam was specified for the Hasko-Struct building panels and as the perimeter insulation by the architectural firm of Manson and Carver Associates. It has a low K factor that *stays low* because Styrofoam won't absorb water. It doesn't rot, mold, deteriorate or warp. In addition, Styrofoam is a rigid insulation with high compressive

strength. It makes panels stronger and won't pack down. Yet it's very light in weight.

If you need an outstanding insulation for curtain wall construction, perimeter or plaster base installations, cavity walls or low-temperature work—investigate Styrofoam. Contact your nearest Dow sales office today. THE DOW CHEMICAL COMPANY, Midland, Mich.

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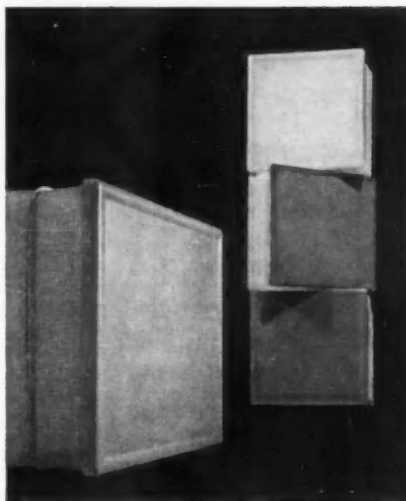
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*On the first five months following their introduction in May 1957, Color Glass Blocks by Pittsburgh Corning have been specified by more than 50 leading Architects. Projects include schools, churches and commercial buildings. This product, pioneered by PC, comes in a variety of ceramic face colors and is translucent.*

*It is available on Architect's  
Pittsburgh Corning*



*specification only.  
Corporation*



*For complete information on this new design medium for Glass Block Curtain Walls, write Pittsburgh Corning Corporation, Dept. C-127, One Gateway Center, Pittsburgh 22, Pa. In Canada: 57 Bloor Street West, Toronto, Ontario*

## THE RECORD REPORTS NEWS FROM CANADA

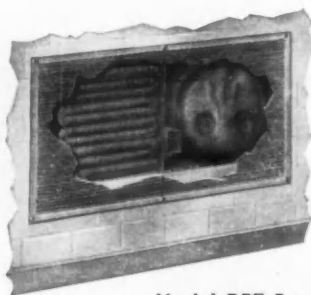
(Continued from page 36)

### MORE THAN A RACE TRACK: TORONTO'S WOODBINE PARK

The 780-acre, \$13 million race track opened last year in Toronto's Woodbine Park has three tracks and can comfortably accommodate 40,000 spectators — 8751 of them in clubhouse and grandstand, 20,000 as standees and the bal-



a water cooler that fits *inside* the wall...



• • • Model RPT-5 gph • • •

This super-slim cooler is only 6 3/4" deep x 23 1/4" wide x 21 1/2" high. It fits in any extremely small area. The illustrated wall grille is available for access to cooler when installed inside the wall.

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ance enjoying various other facilities on the grounds. Woodbine also has its own community center, including a 22-bed hospital, a bank, florist and barber shops, three cafeterias and two dining rooms. For off-duty jockeys, there are a baseball diamond and a football field. Architect was Earle C. Morgan of Toronto.

The tracks are a one-mile dirt track and a seven eighths-mile turf track plus another one-mile dirt track for training. The clubhouse seats 2528, the grandstand 6223; and free parking is provided for 35,000 cars — 30,000 "public" spaces and 5000 clubhouse spaces.

Stabling facilities accommodate 896 horses and provide double-deck bedrooms, with tile showers and bath, for 600 men.

Seating is arranged on four tiers so that "every seat appears to be over the finish line," and there are concessions, mutual windows and rest rooms on every level within a few ft. of every seat. There are escalators, elevators and ramps for access to all levels. The entire track can be cleared in 15 minutes.

Green and white is the predominant color scheme, and the park is elaborately landscaped — there is an outlook over the infield of shrubs, artificial lakes and waterfalls and elsewhere on the grounds there are a number of sunken gardens.

(Continued on page 44)

## ARCHITECT and ENGINEER

# select Sarcotherm heating control system for simplicity – economy – dependability!

Previous favorable experience with the Sarcotherm Weather-Compensated Heating Control System on similar housing projects led to its specification again for the Maywood Terrace Housing Project, Watertown, N. Y., shown, right.

Among the many advantages of this Sarcotherm System are:

(1) Simple, rugged instruments – including unit programming control panel – designed by Sarcotherm specifically for apartment building heating control; (2) quality construction to highest standards; (3) lower installed costs because less wiring required; (4) easily field-adjusted by maintenance personnel to desired temperature levels; (5) fully weather-compensated controls for comfort with fuel economy.

### OTHER ADVANTAGES OF SARCOTHERM SYSTEMS

**Application engineering** – Sarcotherm engineers, backed by years of experience in apartment heating control systems, assist consulting engineers with individualized system diagrams.

**Easy to install** – tailor-made drawings and diagrams of the complete system are furnished for each job.

**Easy to maintain and adjust** – by regular maintenance men, because of construction simplicity, fewer parts.

**On-the-job assistance** – to contractors from Sarcotherm's field engineers.

**Undivided responsibility** – complete control system plus heating specialties and accessories from one dependable source – Sarcotherm.



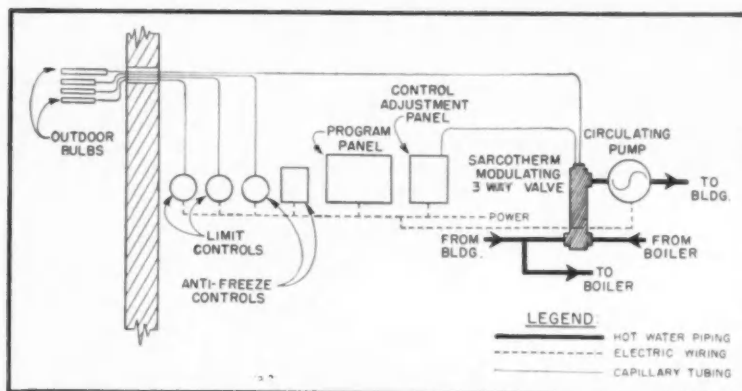
FOR TECHNICAL BULLETIN NO. 2 on Apartment and Institutional Control Systems write... Sarcotherm Controls, Inc., 635 Madison Ave., New York 22, N. Y.

4012-B



**Maywood Terrace Housing Project, Watertown, N.Y.**

Equipped with Sarcotherm Weather-Compensated Control Systems for hot water heating. **Built by** – Watertown Housing Authority. **Architect** – Sargent-Webster-Crenshaw & Folley, Watertown, N. Y. **Consulting Mechanical Engineer** – Galson and Galson, Syracuse, N. Y. **Heating Prime Contractors**—Burns Bros., Syracuse, N. Y.



### FEATURES OF THIS SYSTEM

1. Weather-compensated fully-modulated control.
2. Automatic program control for day, night and morning heat-up.
3. Automatic shutdown in mild weather.
4. Anti-freeze protection.

# Sarcotherm

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*Weather-Compensated control systems for steam, hot water and radiant heating*



**ABOVE:**

**Blue Cross Building, Los Angeles**

Architects: **Allison & Ribble**

Porcelain Enamel: **California Metal Enameling Co.**



**LEFT:**

**Devon Hill Corporation, Detroit**

Architects: **Tully and Hobbs**

Porcelain Enamel: **Wolverine Porcelain Enameling Co.**

**BELOW:**

**Dunbar Life Insurance Co. Building, Cleveland**

Architects: **Madison and Madison**

Porcelain Enamel: **The Enamel Products Co.**

**RIGHT:**

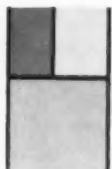
**America Fore Insurance Group Building, Chicago**

Architects: **Loeb, Schlossman & Bennett**

Porcelain Enamel: **The Erie Enameling Co.**







# Colorful porcelain enamel curtain walls give office buildings durable beauty, assure low maintenance

Architects utilize unusual design freedom provided by porcelain enamel on Armco Enameling Iron to create distinctive single and multi-story curtain wall structures.

**T**hese four distinctive, colorful office buildings demonstrate how porcelain enamel curtain walls create the opportunity for individual architectural expression.

## More Design Freedom

Porcelain enamel on Armco Enameling Iron gives you an unlimited choice of hues, enables you to make color a basic element of design. You can select the exact tone needed for effective contrast or harmonious blending.

Economical standard panels are available in almost

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## Proved Durability

More than a quarter-century of satisfactory service in architecture is your assurance of the economical durability of porcelain enamel on Armco Enameling Iron. Weather has no visible effect on either color or surface. Buildings with porcelain enamel curtain walls retain their client-pleasing new look indefinitely.

## Low Maintenance Costs

Curtain walls of porcelain enamel cost less to maintain because their hard, color-fast surface sheds dirt. Rain plus an occasional cleaning with soap and water keeps them looking like new. Porcelain enamel on Armco Enameling Iron also provides strength and rigidity.

In your plans for large or small buildings of any type, consider the durable beauty and economy you can offer clients by specifying curtain walls of porcelain enamel on Armco Enameling Iron.

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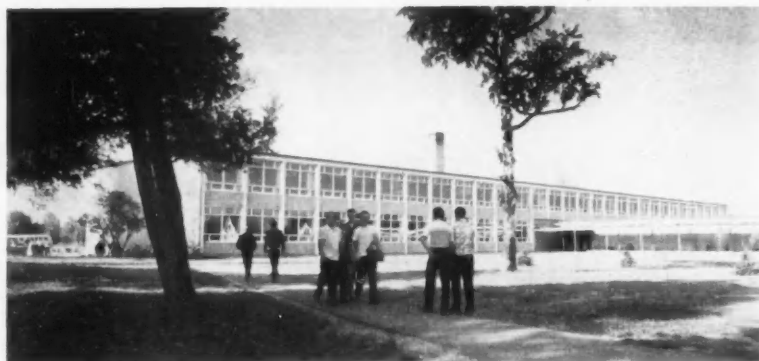


## THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 50)

### CMHC AWARDS FELLOWSHIPS FOR CITY PLANNING STUDY

Fifteen fellowships for postgraduate study in community planning at Canadian universities have been awarded by the Central Mortgage and Housing Corporation. The fellowships are valued at \$1200 each.

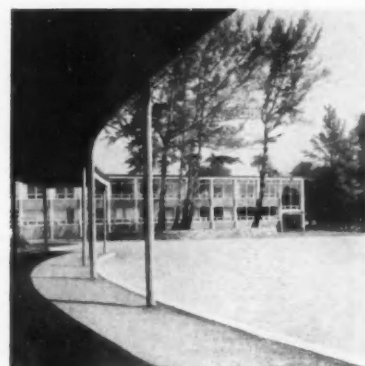


*Collingwood District Collegiate Institute, Collingwood, Ont.; Shore and Moffat of Toronto, Architects*

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Award winners are: J. R. Anton and Q. H. Stanford, Toronto, University of Toronto; E. T. Clegg and R. A. Williams, Vancouver, T. W. Loney, Calgary, and R. S. McConnell, Edmonton, University of British Columbia; K. J. Jones, H. B. Goldman and Mrs. C. D. Walford, Montreal, McGill University; N. J. Metz and S. H. Osaka, Montreal, University of Manitoba.

Also Miss Jean Downing, Regina, and S. W. Pape, Vancouver, University of British Columbia; Miss Edith Wasserman, Toronto, University of Toronto; and Rev. J. E. Page, Winnipeg, University of Manitoba.

The committee of awards consisted of Prof. D. L. Thomson, dean of the Faculty of Graduate Studies and Research, McGill University, chairman; Prof. A. P. C. Adamson, president of the Town Planning Institute of Canada; Eric Thrift, director of the Metropolitan Planning Commission of Greater Winnipeg; and Alan Armstrong, representative of C.M.H.C.

### QUERIES FLOOD TORONTO IN CIVIC SQUARE COMPETITION

Inquiries about the international competition for the design of Toronto's civic

(Continued on page 56)

## NOTES FROM AN ARCHITECT'S SKETCH BOOK



IN THE RECEPTION ROOM- NEW MASONITE SEADRIFT PANELS MAKE INTERESTING TEXTURAL CONTRASTS WITH ROOM FURNISHINGS AND ADD RICHNESS TO OTHERWISE DRAB DECOR.

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NEW MASONITE SEADRIFT PANELS COMBINE WITH ALL OTHER MATERIALS AND FURNISHINGS TO CREATE SMART DECORATIVE SCHEMES. ECONOMICAL FOR REMODELING.



### IN THE HOME

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FOR DRAMATIC BACKGROUND EFFECTS—

# MASONITE'S

## NEW SEADRIFT PANELS

Seadrift, a tempered hardboard, is  $\frac{1}{4}$ " thick in 4' widths, up to 16' long. Authentic wood-grain pattern deeply embossed and random-

groove pattern added. Butt joints provide a continuous pattern. Now distributed east of the Rockies, through lumber dealers.

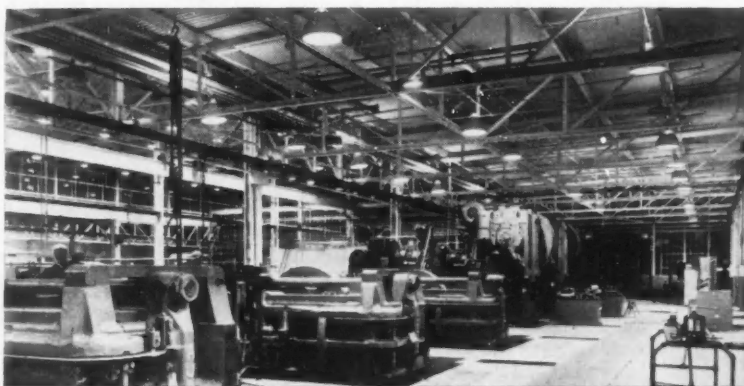
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## Low bay...



## or high bay...



## Improve lighting, reduce eye fatigue with Abolite upright fixtures

Only a small amount of light (18%) is directed upward through the open top of Abolite upright fixtures, but it makes a big difference in both high bay and low bay installations. Dark ceiling shadows are washed away—there's no sharp contrast of bright light against black background. Eye fatigue is reduced—workers are more efficient. Air circulation through the open top fixture sweeps the reflecting surfaces clean, keeps maintenance at a minimum.

There are three Abolite upright units: 18" and 24" diam. Alzak fixtures for use with 400 and 1000 watt mercury lamps; 18" Alzak fixtures for 500 watt incandescent lamps. For full details, write Abolite Lighting Division, The Jones Metal Products Co., West Lafayette, Ohio.

### INSTALLATION DATA

Top picture: 24" Abolite Alzak aluminum fixtures with H-400-watt RC1 color-improved mercury lamps, 18' mounting height, spaced 13' 4" by 16' 8", 60 foot-candles average initially.

Bottom picture: 24" Abolite Alzak aluminum fixtures with H-400-RC1 color-improved mercury lamps, 28' mounting height, spaced on 20' centers, 35 foot-candles average initially.

# ABOLITE

Lighting



## THE RECORD REPORTS NEWS FROM CANADA

(Continued from page 44)

square (AR, Sept. 1957, page 44) are coming in from all parts of the world, even from behind the Iron Curtain, Professional Adviser Eric R. Arthur has announced. Copies of the "Conditions of Competition" may be obtained from Professor Arthur (address him % City Hall, Toronto, Canada).

Special secretarial facilities have been provided by the city to cope with the flood of mail from the United States, Great Britain, Sweden, Italy, Greece, Czechoslovakia and other countries.

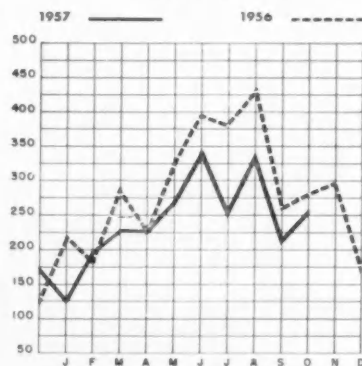
Closing date for submission of drawings in the first stage of the competition is March 28, 1958. At the end of the first stage, eight competitors will be selected to compete in the second stage, at the end of which each will receive \$7500. The winner will be the architect for the building and will be paid a \$25,000 advance on his six per cent fee. The City of Toronto has not set a limit to cost of the project, but estimates have ranged up to \$18 million.

Jury for the competition has been announced as follows: Eero Saarinen, architect, Bloomfield Hills, Mich.; Sir William Holford, architect and planner, London; Ernesto Rogers, architect, Milan; C. E. Pratt, architect, Vancouver; and Prof. Gordon Stephenson, architect and town planner, Toronto.

The "Conditions of Competition," which were drawn up by Professor Arthur, received the official sanction of the Toronto City Council. The required scheme will provide a 660,000-sq-ft city hall designed for expansion and set in a square developed as a park.

### Contracts Awarded: Comparative Figures\*

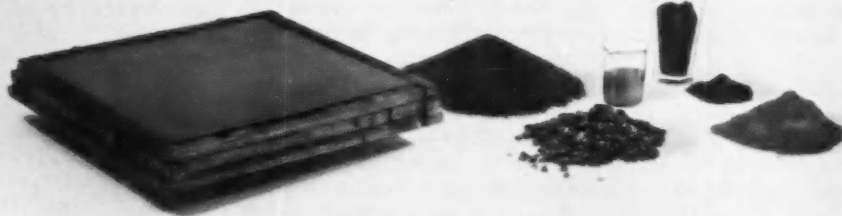
(in \$ million)



\*Compiled by the Editor and staff of the Building Reporter, from information collected by Maclean Building Reports

(More news on page 48)





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### U. S. FORECAST PREDICTS 1958 CONSTRUCTION RISE

The U. S. Departments of Labor and Commerce last month predicted a five per cent increase in total new construction outlays in 1958 compared with 1957. This would mean that this year's \$47.2 billion expenditure would rise to an estimated \$49.6 billion next year. The 1957 increase over 1956 was two per cent, the 1956 figure being \$46.06 billion.

Private construction, said Commerce and Labor, should show a four per cent rise next year, whereas it is registering an increase of less than one half per cent this year. Housing, the big segment of the private category, will reverse its expenditure trend next year, the government said, jumping six per cent from the relatively low outlay of \$12,125 million this year to an anticipated \$12,800 million. The dollars spent in 1957 were said to be 10 per cent under the 1956

level — \$12,125 million against \$13,490 million.

Unitwise, the departments said the estimated outlay for 1958 assumed construction of 1,040,000 new non-farm dwellings next year.

In the public category, Uncle Sam looks for a seven per cent increase in expenditures next year, or \$14.9 billion compared with \$13.9 billion this year. The 1956 figure was \$12,818 million, eight per cent this year. Thus, the anticipated gain in public works expenditures for 1958 is not quite as much as the increase this year over last. Public housing's phenomenal growth, dollarwise, will continue next year, but the increase over 1957 will be 68 per cent as against a 73 per cent rise this year over 1956. The figures assume construction of 50,000 new public housing units next year. The annual total outlays for public housing are \$292 million in 1956, \$505 million in 1957, and \$850 million expected for 1958.

Additions and alterations under new work are shown in the forecast announcement as accounting for \$3,915,000 worth of work in 1957 and are expected to jump by nine per cent next year to \$4,250,000. That would be a larger increase than was experienced this year over 1956; the 1956 outlay for additions and alterations was \$3,695,000, according to the government table, making this year's sum six per cent higher than 1956.

No increase is expected next year in dollar volume of farm construction, Commerce and Labor said. The annual expenditure is at \$1.6 billion.

Public utilities, which took a 14 per cent jump this year over last, will climb only six per cent next year, the release stated. The figures: 1956, \$5113 million; 1957 \$5825 million, and 1958, \$6150 million.

Highway expenditures are down for a 14 per cent increase next year compared with the more moderate eight per cent rise this year; 1956, \$4740 million; 1957, \$4825 million; and 1958, \$5.5 billion.

### INTEGRATED RESEARCH CALLED VITAL TO BUILDING PROGRESS

The construction industry has made some remarkable strides forward in the field of research but too infrequently on an integrated basis that recognizes the building itself as the end product, in the opinion of William H. Scheick, ex-

(Continued on page 284)

For "Student Safety" & Design  
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GLAZED ALUMINUM PANEL

GLAZE WITH TEMPERED GLASS FOR ADDITIONAL SAFETY

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- CONCEALS PANIC CRASH BAR
- STRENGTHENS MOST ABUSED POINTS OF DOOR
- MAKES DOOR "Student Safe"

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Western Editor:

ELISABETH KENDALL THOMPSON

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## ART FOR OUR RELIGIOUS BUILDINGS

**BECAUSE** ART for religious buildings must do more than satisfy the artist himself, its kinship with architecture is strong. For just as architecture cannot stand as individual expression but must be related to society, so religious art must relate itself to people — to their age-old and always new problems and perplexities, their hopes and aspirations, their joys and their despairs — or it fails in its reason for being.

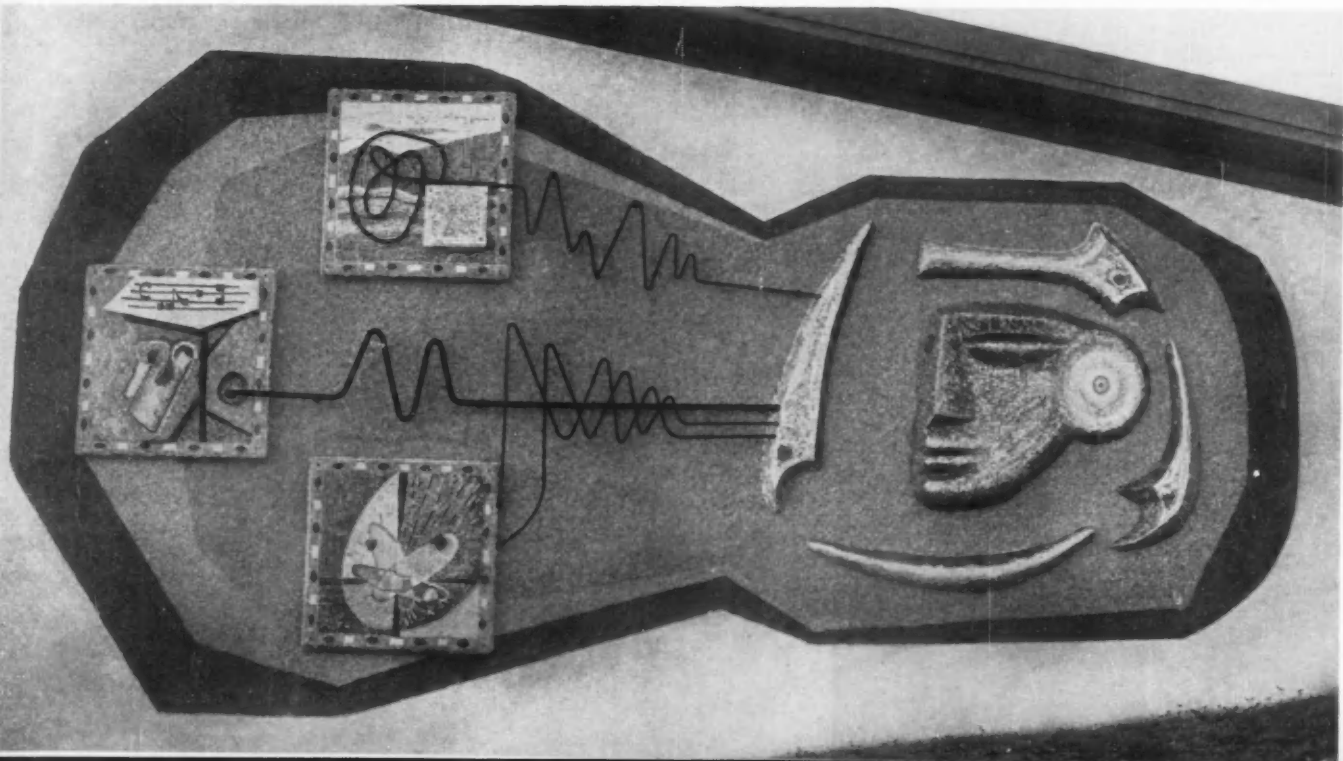
The present revival of interest by church and artists in art for religious buildings comes from more than the prosperity of these times. Underlying it also is a new awareness that neither the written nor the spoken word can reach all men equally well, that for some the visual message transcends all other media of communication. And for others, beauty itself — of color, of time, of form — is the long-sought link, the means to a heightened perception of the verities which are the message of religion.

*Left: Holy Family, carving in wood. Le Roy Setziol, sculptor*



*Shrine of Sacred Heart, chapel, Mount St. Vincent Convent, Seattle. Sculpture in wood is fixed to a panel of brass and copper. James Fitzgerald, sculptor*

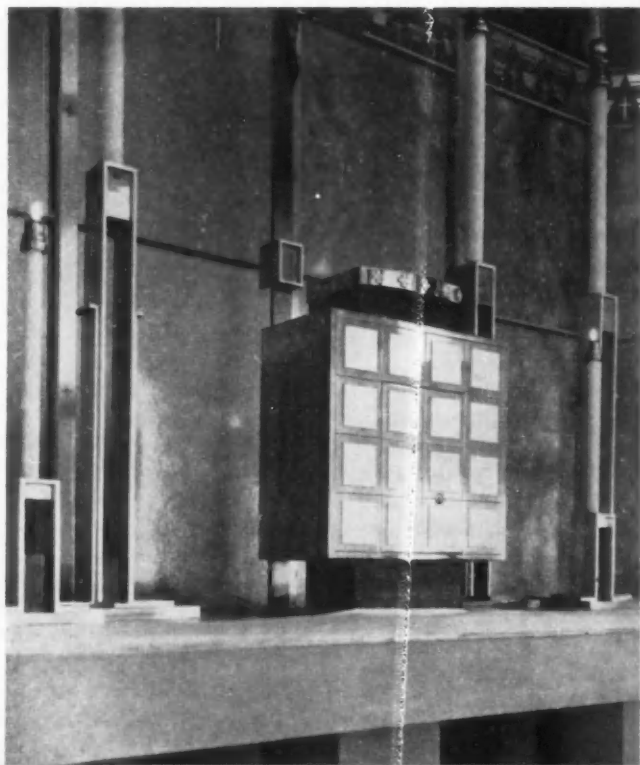
*"The Sophia Mural," College of the Holy Names, Oakland. Abstract in mosaic and black iron symbolizing source of true wisdom (right) and three branches of learning (left): philosophy and religion, top; arts and letters, center left, and natural sciences, bottom. Head is gold on mauve background. Small panels are blue, red, gold. Louisa Jenkins, mosaicist*



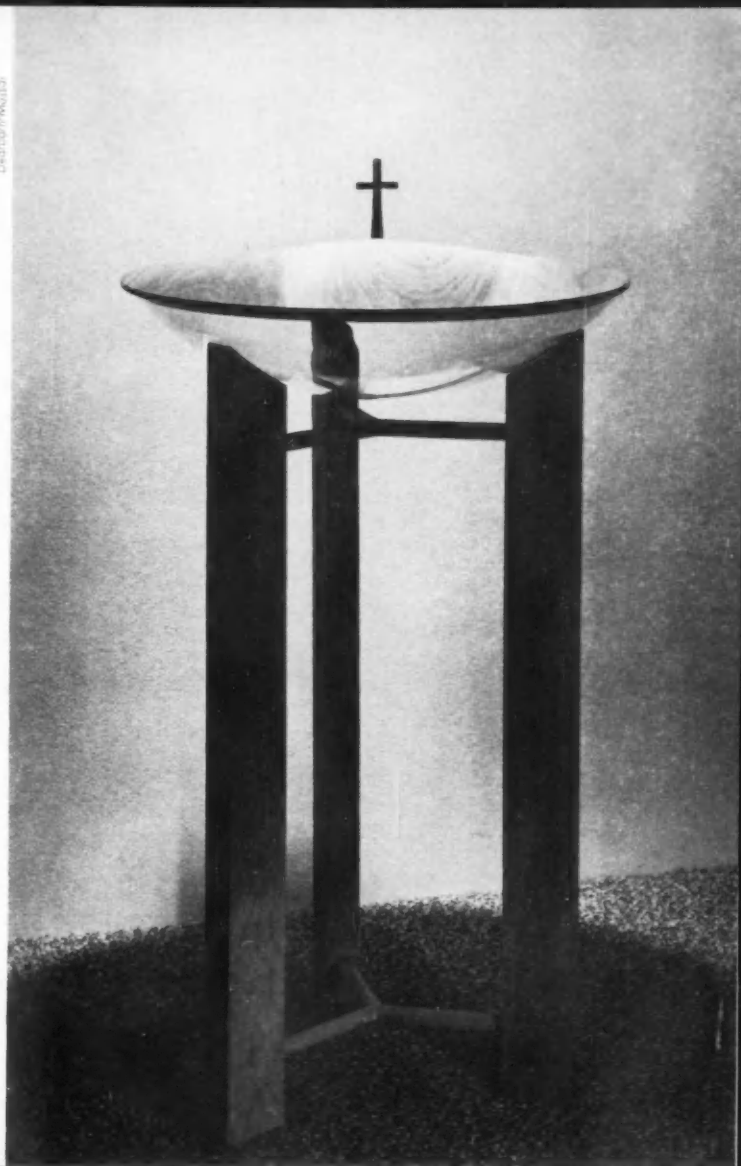


**ART FOR OUR  
RELIGIOUS BUILDINGS**

*Tabernacle and candelabra, Chapel of  
Mount St. Vincent Convent, Seattle. Paul  
Thiry, architect, designed these altar  
pieces*



Art Huy



Deborah M. Miller

*Baptismal font, Hope Lutheran Church,  
Tacoma, Wash. Robert B. Price, archi-  
tect for church (see pages 182-185) also  
designed font*



Courtesy Douglas Fair Playwrights

"Plyvault" pavilions, designed by George and Evelyn Kosmak, use 8-ft vault sections, have 40-ft clear span, 8-ft cantilevered overhangs at ends



(top)  
Larger of two geodesic domes was this 39-ft-diameter "ply-dome" supervised and constructed by architect Tom Moore of Denver and Shell Structures, Inc.



(center)  
"Do-it-yourself" vacation cottage, designed on geodesic principle by architects Marquis & Stoller of San Francisco, was erected in two and a half hours by four men "Ply-dome" is 25 ft in diameter



(bottom)  
Bandstand canopy is made up of five plywood vaults supported by light metal scaffolding. George and Evelyn Kosmak, designers

## STRUCTURE DOMINATES SAN FRANCISCO'S ART FESTIVAL

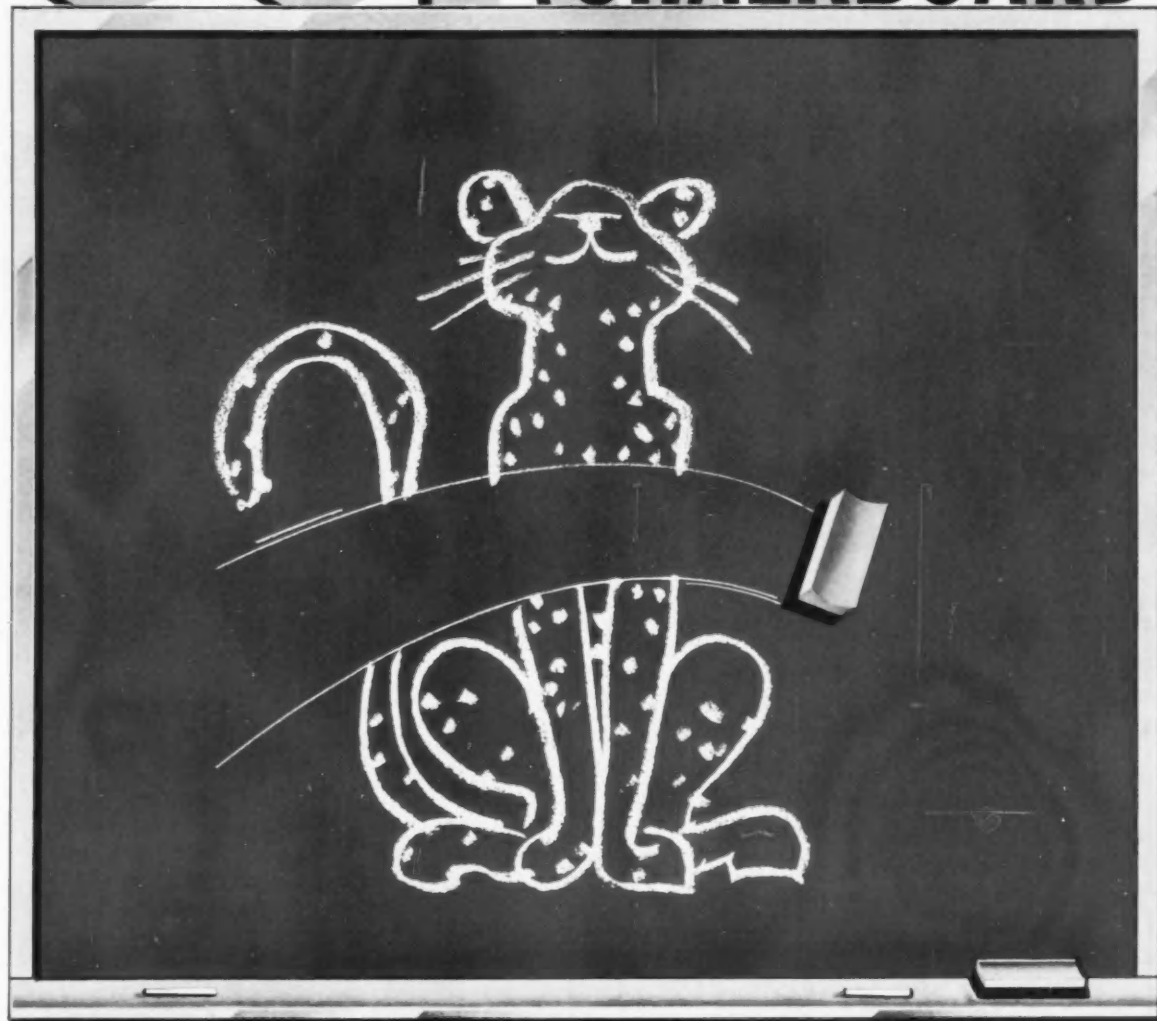
WITH "Arts in Architecture" as its theme, this year's San Francisco Art Festival was a natural for structures—and it got them in plenty: two "plydomes" (built under license from Buckminster Fuller), a bandstand roofed with five "plyvaults," two exhibit pavilions, a "garden star," a 40-ft sculpture by Robert Howard called the "Hydro-gyro" because it is a mobile to be used with a fountain, and an exhibit of models by members of the Northern California chapter, A.I.A.

Again this year the show was held outdoors, but this time the locale was Washington Square in the North Beach area, traditional residence of artists. Some 1500 artists participated in the festival and, despite a downpour that almost wrecked some parts of it, San Franciscans by the thousands—30,000 on opening day alone—visited it.

Although the pavilions and the bandstand were popular during the rain, the two geodesic domes proved the most intriguing of the structures to the visitors. Both were architect-designed (Marquis & Stoller were architects for the smaller, "do-it-yourself" vacation cottage; George & Evelyn Kosmak with Tom Moore of Denver for the larger one housing the Industrial Designers' Institute's exhibition).

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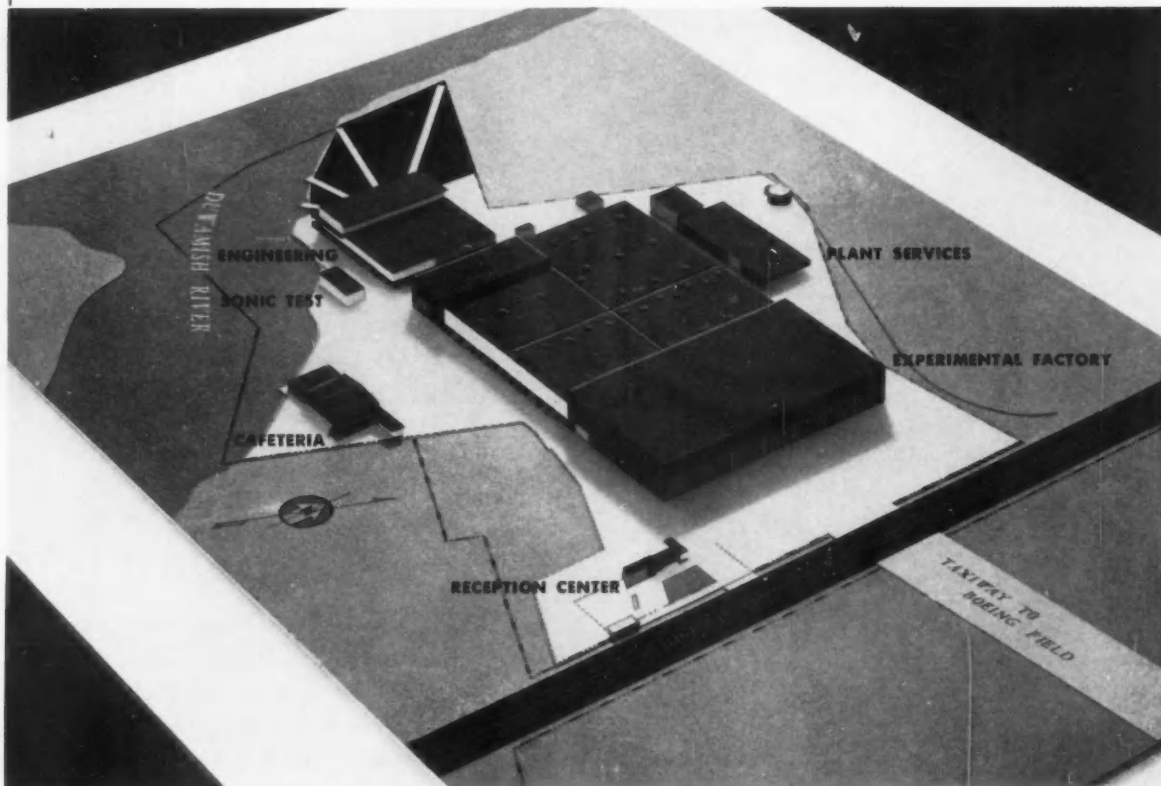


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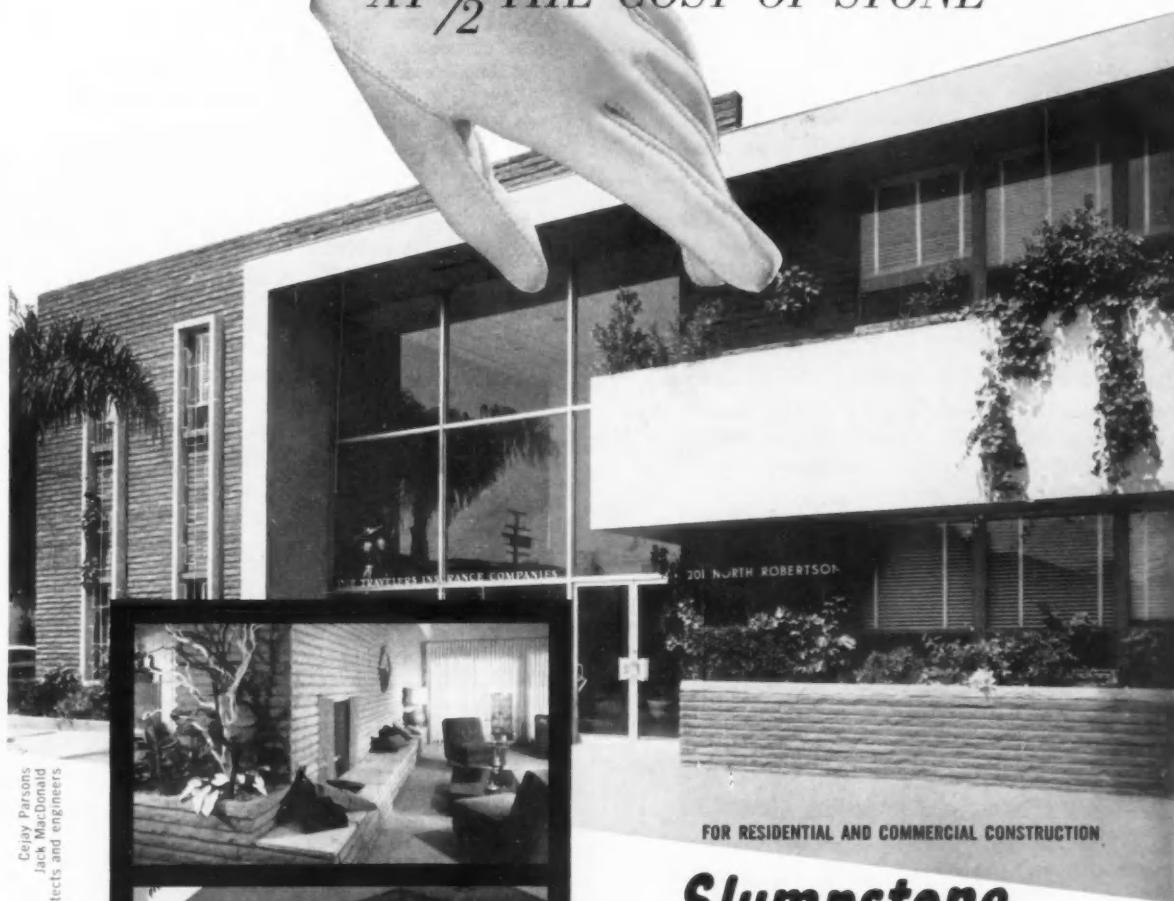


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Four of five members of California Board of Architectural Examiners: Earl T. Heitschmidt, Los Angeles, Wendell Spackman, San Francisco, Malcolm Reynolds, C. J. Paderewski, San Diego



Above: Corwin Booth, San Francisco; Kenneth Johnston, Los Angeles; Donald Hardison, Richmond; Northern California chapter president William Corlett; Loy Chamberlain, Oakland; chapter presidents C. M. Deasy, So. Calif. Harry Clausen, E. Bay. Below: Maury Metz, Fresno; Warren Wright, Bakersfield; William Glenn Balch, Los Angeles, Fred Richards, Santa Clara, California Council president and vice president, respectively



## N.W. ARCHITECTS DISCUSS "EXPANDING THE PRACTICE OF ARCHITECTURE"

NORTHWEST REGIONAL conferences are like no other such meetings. During the three days of their annual conference, the architects of Idaho, Montana, Oregon and Washington explore every possible facet of their chosen theme, in and out of programmed sessions which start at eight in the morning and continue through an evening meeting. Truly professional in scope and in tone, these meetings, dealing as they always do with the essence of architecture, instruct, stimulate and inspire, and at the same time provide the expected measure of good times and good fellowship which become the sum and substance of too many conventions.

This year's conference — *conference*, not *convention* — held on the Oregon Coast at Gearhart, had as its theme "Expanding the Profession of Architecture," an exploration into the ways by which and the areas in which the architect could extend his responsibility both in the community and in the profession. Over 300 registered for the conference, the largest attendance since the institution of the four-state regional meeting. (Oregon and Washington architects held an annual two-day meeting for many years before the A.I.A. instituted its program of regional meetings.)

Heading the list of speakers were architects Henry Hill and Francis Joseph McCarthy of San Francisco and Dean Jose Luis Sert of the Harvard Graduate School of Design.

(Continued on page 48-20)

## FULLER, CANDELA

### HEADLINE CCAIA CONVENTION

WITH A THEME and a keynoter for each of the two days out of the convention's four allotted for professional meetings, this year's California Council, A.I.A., convention at the Hotel del Coronado was the biggest yet. Some 900 registered, of whom 250 were architects, and another 250 visited the various sessions. Others attending were guests, members of the Producers Council and — largest group of all — exhibitors.

Headliners on the program were the two keynoters, Buckminster Fuller (for "Design through Structure") and William T. Sesnon, acting executive director of Los Angeles' Community Redevelopment Agency (for "Community Redevelopment"), and Felix Candela of Mexico City who, with structural engineers Richard Bradshaw and Edgardo Contini of Van Nuys and Los Angeles, was assigned to discuss "Contemporary Engineering Aids to Design." Ably and wittily moderated by Gardner Dailey, this panel's discussion presented the interesting paradox of an architect who thinks like an engineer and engineers who can think like architects, with all agreeing that architectural and structural design must go hand in hand rather than the one achieving its objective through the other.

Other speakers included landscape architect Lawrence Halprin, realtor John Cotton, consulting engineer Henry Babcock and planner Charles Bennett who, moderated by Arthur Gallion, dean of USC's School of Architecture, talked on "Community Planning and Redevelopment"; and architects Maynard Lyndon, Raphael Soriano, George Vernon

(Continued on page 48-22)

"Babe, this here's a ree-tort," explained Paul Bunyan to his faithful Blue Ox. "Fer pressure treatin' wood. Them Baxter folks never dunk it, er spray it, er paint it. They got a real fancy process: They stick the wood inside this ree-tort, lock her up fer 20 hours, and when she comes out she's BAXCO pressure treated—chock full o' presarvatives." The great logger scratched his head with a pine tree. "I dunno how they do it, Babe, but them Baxter boys shore treat wood good—they make it last forever." \*



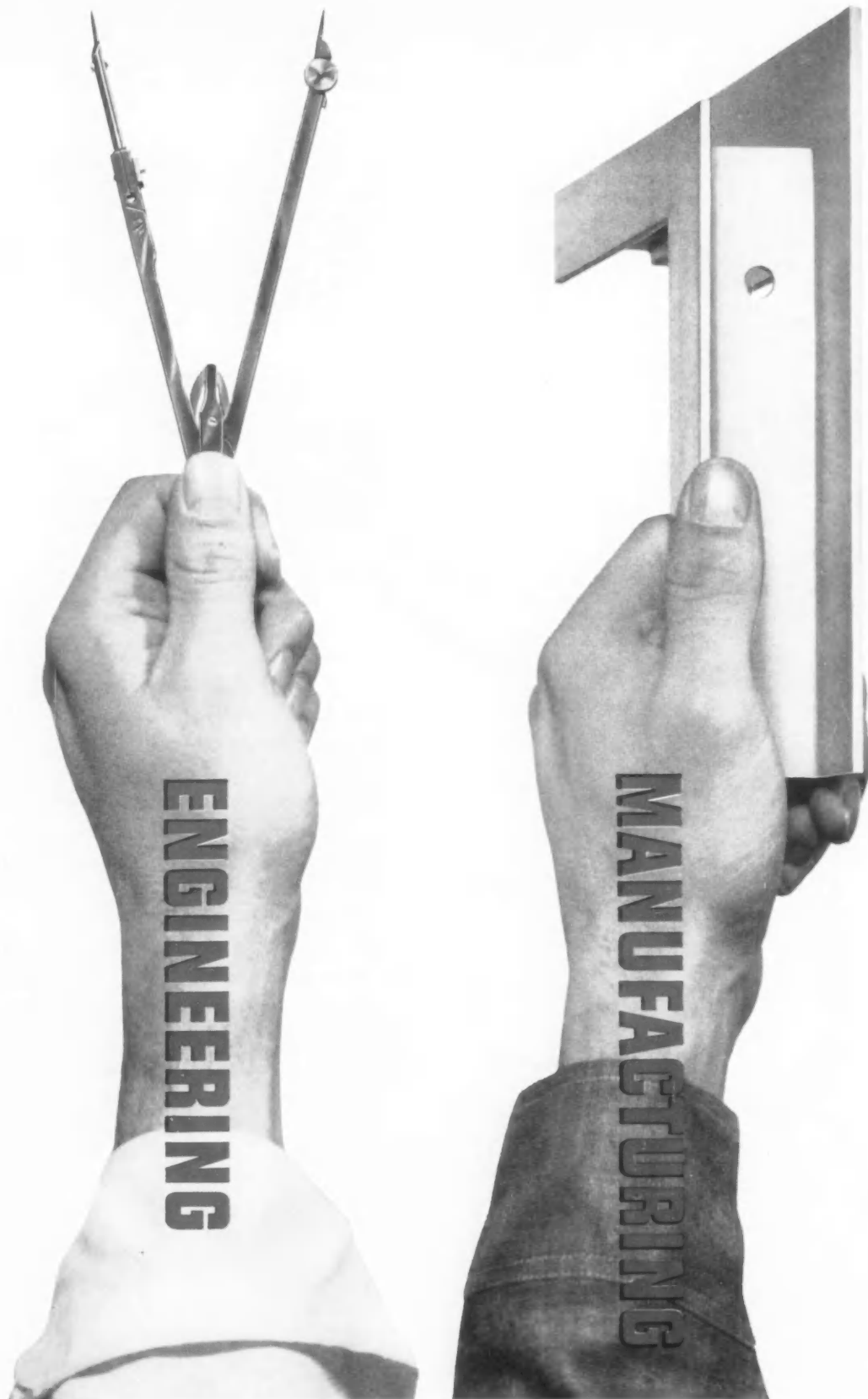
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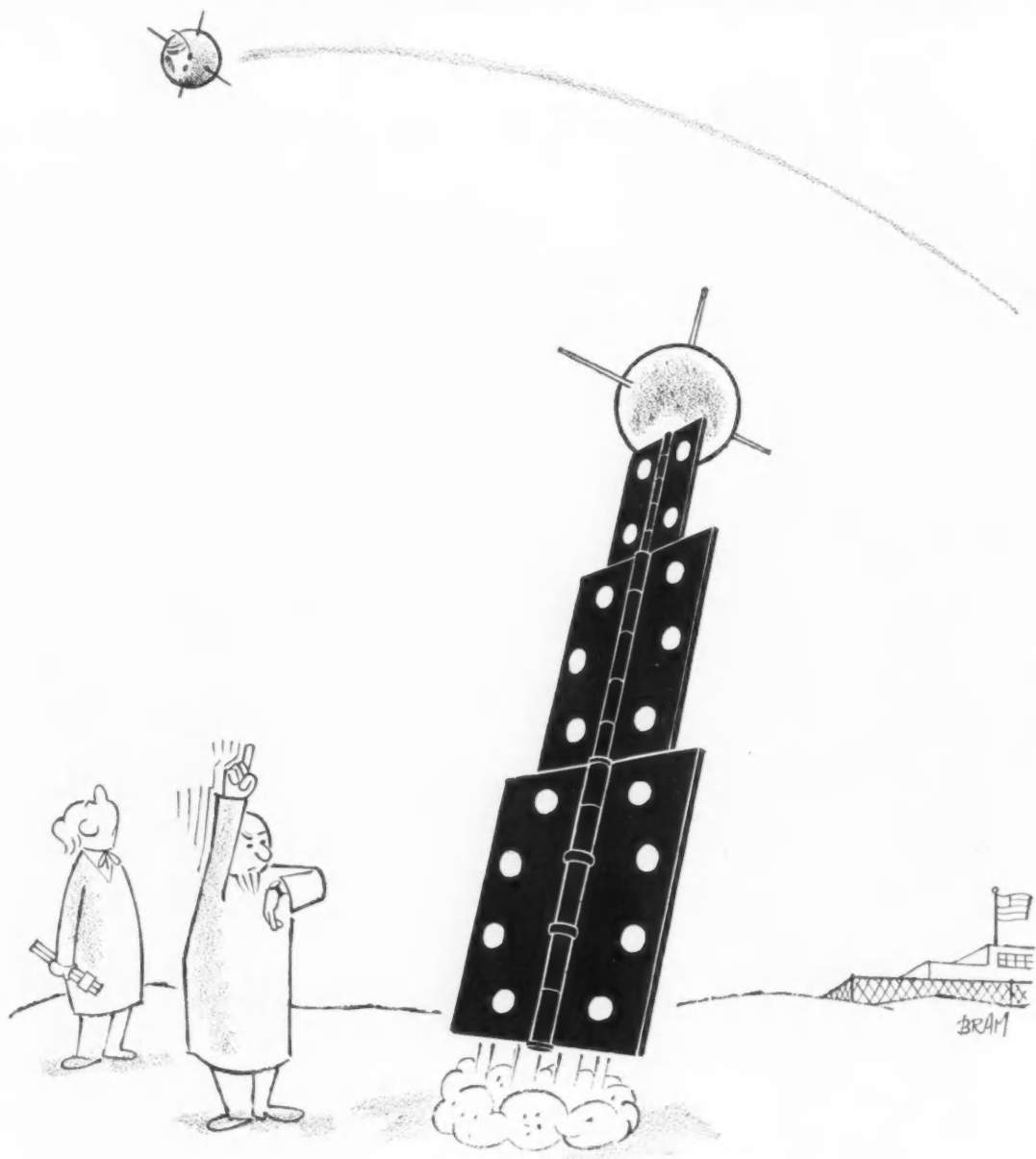
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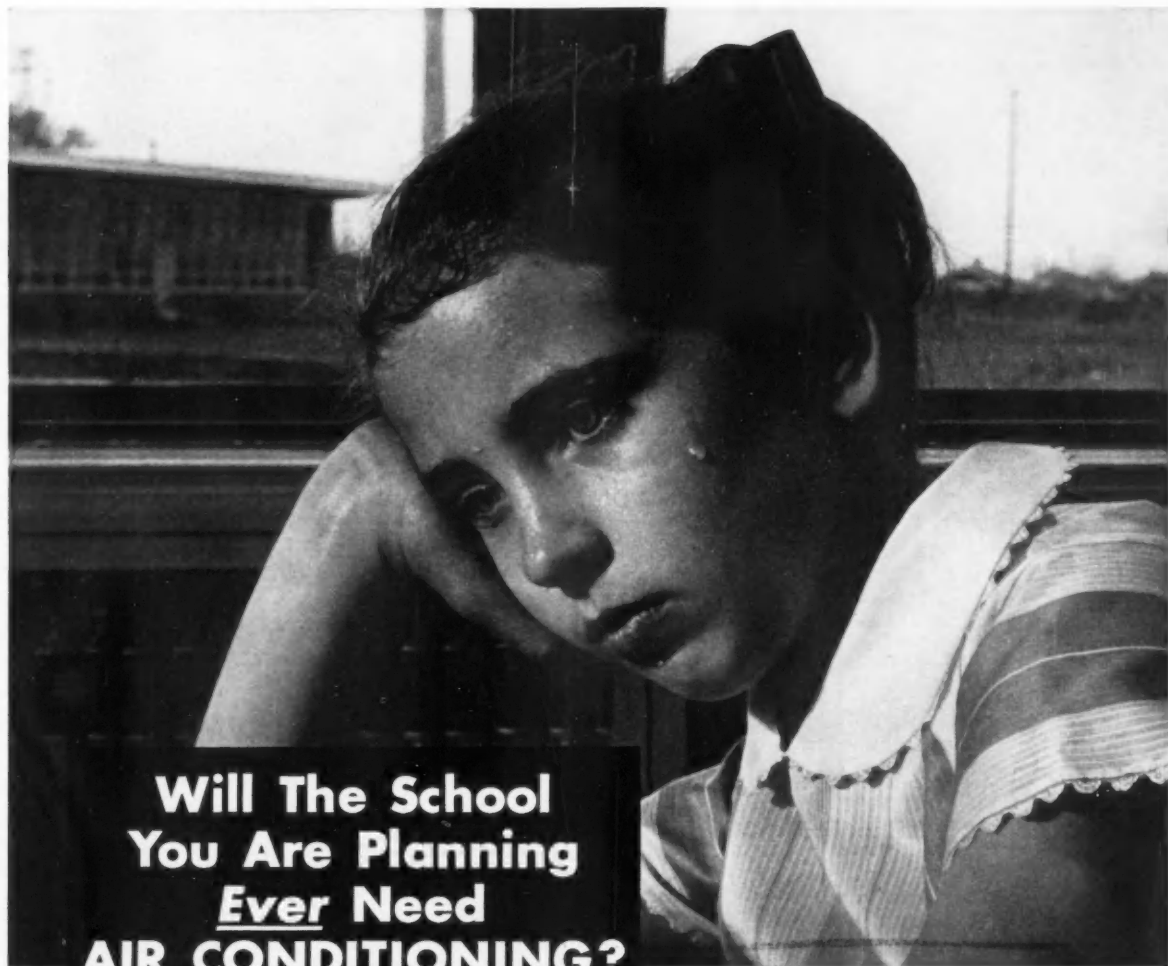


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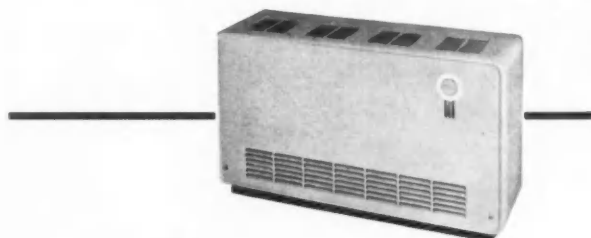
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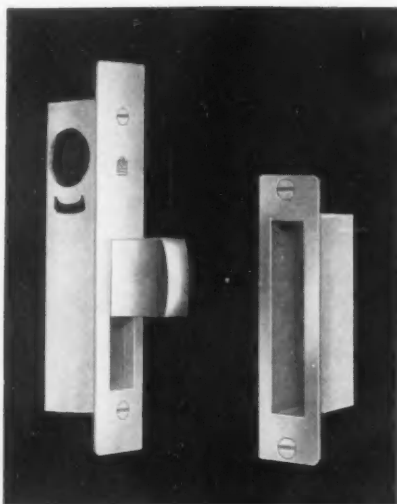
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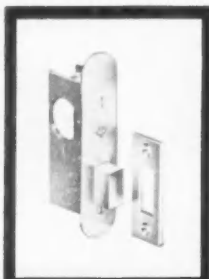
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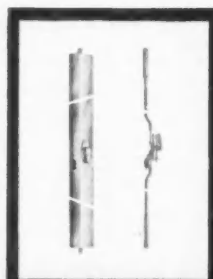
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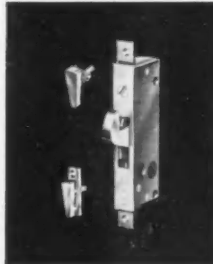
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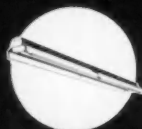
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## N.W. ARCHITECTS DISCUSS

### "EXPANDING THE PRACTICE OF ARCHITECTURE"

(Continued from page 48-12)

and editors Thomas Creighton of *Progressive Architecture* and John Knox Shear of *ARCHITECTURAL RECORD*.

That the architect must no longer consider the building he designs as something that stands alone, and that he must regard architecture as an inclusive rather than an exclusive calling, all the speakers agreed, each in his own way.

Other speakers included architect and sculptor Philip  
(Continued on page 48-22)



Above: Seminar on terrace led by Henry Hill of San Francisco was one of several held after main program speakers talked. Left: Dean Sidney Little, U. of Oregon; unidentified, Robert Price, Tacoma and Mrs. Price; Saul Zaik, Portland; Paul Edlund, Eugene, and unidentified man

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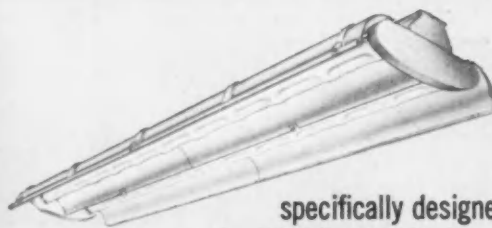
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#### N.W. ARCHITECTS (Continued from page 48-20)

Gilmore, landscape architect George Jette, Paul Roseland and William Wilbanks, ceramist, all of whom participated in a panel on the architect and the allied arts; A.I.A.'s Leon Chatelain and Edwin B. Morris, Jr.; editors Francis Brown of *Western Architect*, Proctor Mellquist of *Sunset*, Robert Koehler of *Pacific Architect and Builder*; who took part in a panel discussion on "Selling the Architect"; and Elisabeth Thompson of ARCHITECTURAL RECORD who summarized the conference in the closing session.

#### FULLER, CANDELA HEADLINE CCAIA CONVENTION (Continued from page 48-12)

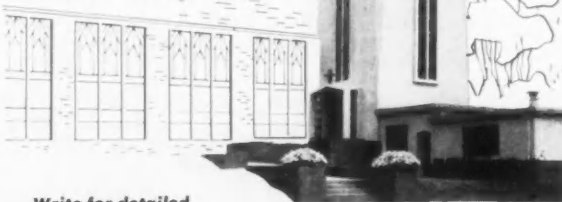


Convention chairman Wallace Bonsall, Pasadena, with Henry Wright, Los Angeles, Felix Candela, Mexico City, who was a feature speaker

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## CALENDAR OF WESTERN EVENTS

- December 1-22: Church Art Today, juried exhibition, Grace Cathedral, 1055 Taylor Street, San Francisco
- December 6-January 5: Contemporary Danish Design in Textiles and Furniture. M. H. deYoung Memorial Museum, Golden Gate Park, San Francisco
- February: Annual building industry conference, sponsored by Associated Building Contractors of Colorado, Inc., and University of Colorado, Boulder, Colo.
- March 8-12: Regional conference and exhibition of architects' work in school field, American Association of School Administrators, San Francisco

Russell and AIA research committeeman Melvin Frank, and Producers' Council representatives E. J. Lawson, Morris Hales, Albert Barnes and Ralph Lane, with architect Anthony Thormin as moderator, who made up a panel to discuss — for the first time in the West — the aesthetic considerations in curtain wall design. Characterized as "a race between the rationalities of technology and the irrationalities of design", curtain walls as a solution to design needs proved a highly controversial subject not only between architects and manufacturers but among architects themselves, the big question being whether technology "confines" or "spurs" activity.

## WESTERN SECTION INDEX TO ADVERTISING

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a — Architectural File (green)  
ic — Industrial Construction File (blue)  
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	Nelson, Herman Unit Ventilator Products	48-17
	Pacific Tel. & Tel. Co.	48-20
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	Porcelain Enamel Publicity Bureau	48-22
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Architect: John Carl Warnecke, San Francisco, California.

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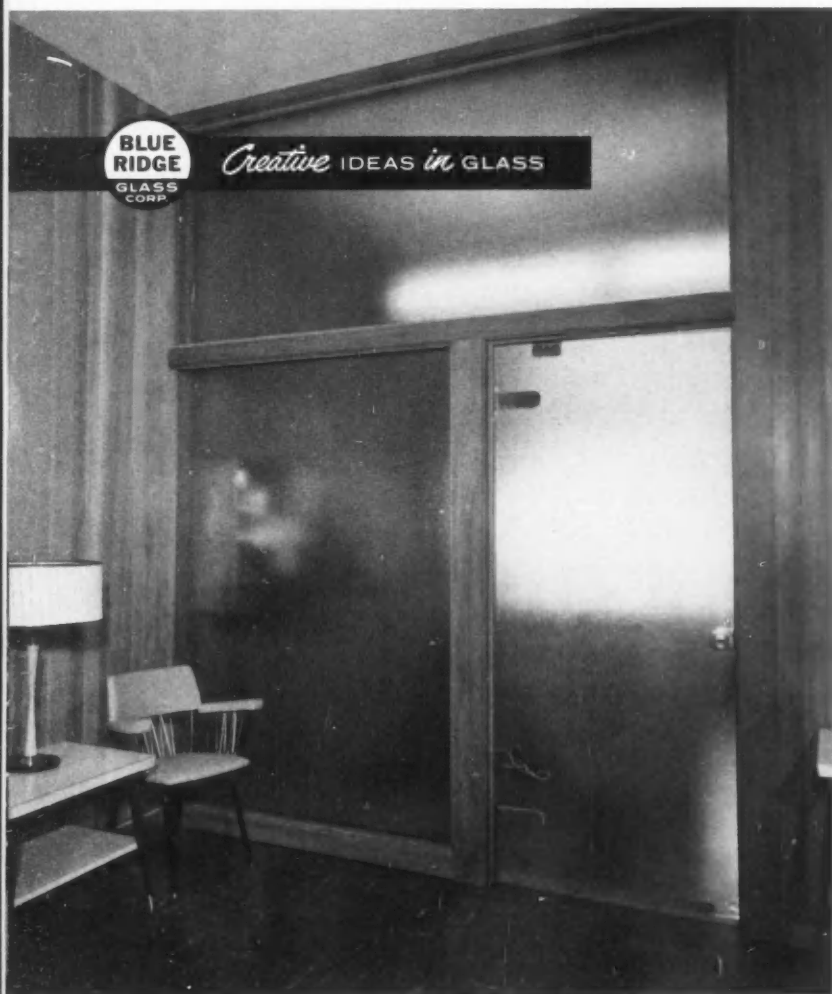


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Architect: Wolf and Hahn, Allentown



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# THE RECORD REPORTS: CONSTRUCTION COST INDEXES

## Labor and Materials

U. S. average 1926-1929=100

Presented by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corp., from data compiled by E. H. Boeckh & Assocs., Inc.

### NEW YORK

### ATLANTA

Period	Residential		Apts., Hotels Office Bldgs. Brick and Concr.	Commercial and Factory Bldgs. Brick and Steel		Residential	Apts., Hotels Office Bldgs. Brick and Concr.	Commercial and Factory Bldgs. Brick and Steel	
	Brick	Frame		Brick and Concr.	Brick and Steel			Brick and Concr.	Brick and Steel
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4
1947	219.3	222.0	207.6	207.5	203.8	180.4	184.0	158.1	157.1
1948	250.1	251.6	239.4	242.2	235.6	199.2	202.5	178.8	178.8
1949	243.7	240.8	242.8	246.6	240.0	189.3	189.9	180.6	180.8
1950	256.2	254.5	249.5	251.5	248.0	194.3	196.2	185.4	183.7
1951	273.2	271.3	263.7	265.2	262.2	212.8	214.6	204.2	202.8
1952	278.2	274.8	271.9	274.9	271.8	218.8	221.0	212.8	210.1
1953	281.3	277.2	281.0	286.0	282.0	223.0	224.6	221.3	221.8
1954	285.0	278.2	293.0	300.6	295.4	219.6	219.1	233.5	225.2
1955	293.1	286.0	300.0	308.3	302.4	225.3	225.1	229.0	231.5
1956	310.8	302.2	320.1	328.6	324.5	237.2	235.7	241.7	244.4
July 1957	321.0	310.7	336.8	349.5	344.6	243.6	241.3	252.0	255.6
Aug. 1957	321.0	310.7	336.8	349.5	344.6	243.6	241.3	252.0	255.6
Sept. 1957	321.2	310.9	337.4	349.5	345.2	242.0	239.3	251.4	255.2
% increase over 1939									
Sept. 1957	160.1	154.0	158.1	162.0	165.3	180.4	188.0	164.4	162.0

### ST. LOUIS

### SAN FRANCISCO

1930	108.9	108.3	112.4	115.3	111.3	90.8	86.8	100.6	104.9
1935	95.1	90.1	104.1	108.3	105.4	89.5	84.5	96.4	103.7
1939	110.2	107.0	118.7	119.8	119.0	105.6	99.3	117.4	121.9
1946	167.1	167.4	159.1	161.1	158.1	159.7	157.5	157.9	159.3
1947	202.4	203.8	183.9	184.2	184.0	193.1	191.6	183.7	186.8
1948	227.9	231.2	207.7	210.0	208.1	218.9	216.6	208.3	214.7
1949	221.4	220.7	212.8	215.7	213.6	213.0	207.1	214.0	219.8
1950	232.8	230.7	221.9	225.3	222.8	227.0	223.1	222.4	224.5
1951	252.0	248.3	238.5	240.9	239.0	245.2	240.4	239.6	243.1
1952	259.1	253.2	249.7	255.0	249.6	250.2	245.0	245.6	248.7
1953	263.4	256.4	259.0	267.0	259.2	255.2	257.2	256.6	261.0
1954	266.6	260.2	263.7	273.3	266.2	257.4	249.2	264.1	272.5
1955	273.3	266.5	272.2	281.3	276.5	268.0	259.0	275.0	284.4
1956	288.7	280.3	287.9	299.2	293.3	279.0	270.0	288.9	298.6
July 1957	293.0	284.6	297.0	308.3	306.1	289.7	278.9	306.1	318.4
Aug. 1957	293.0	284.6	297.0	308.3	306.1	288.3	276.8	305.0	318.0
Sept. 1957	294.8	285.5	299.8	312.5	309.4	289.1	275.3	308.0	322.8
% increase over 1939									
Sept. 1957	167.5	166.8	152.6	160.9	160.0	173.8	177.2	162.4	164.8

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:  
 index for city A = 110  
 index for city B = 95  
 (both indexes must be for the same type of construction).

Then: costs in A are approximately 16 per cent higher than in B.

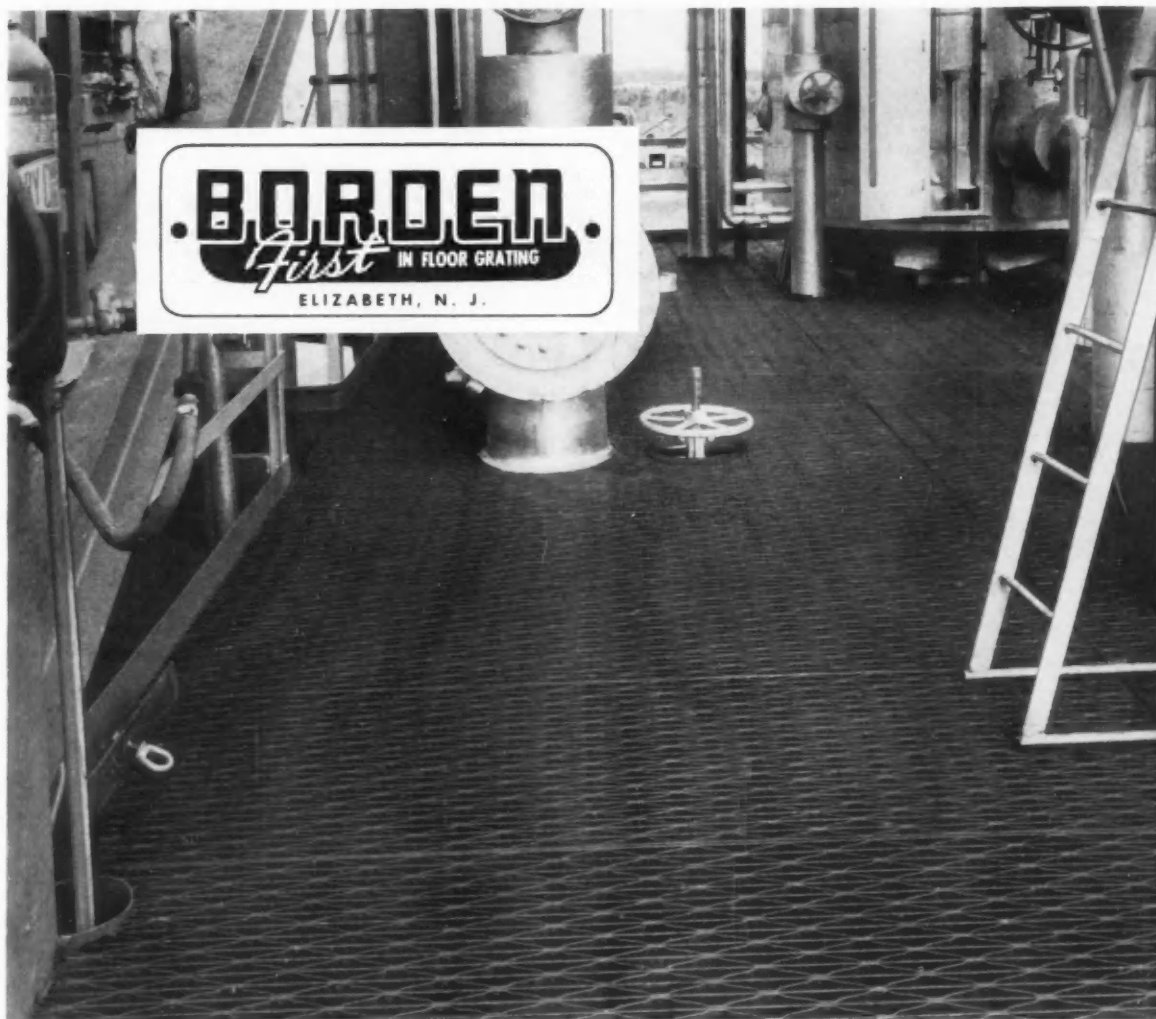
$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published list prices, thus indexes reflect minimum costs and not necessarily actual costs.



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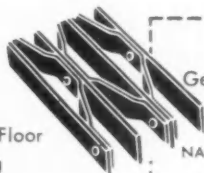
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*Presbyterian Church, Malahide, County Dublin, Ireland. Architect: W. J. Baird, M.R.I.A.I., Kaye Parry, Ross & Hendy. Contractor: S. McConnell & Company, Ltd. All block supplied by Concrete Products of Ireland, Ltd.*



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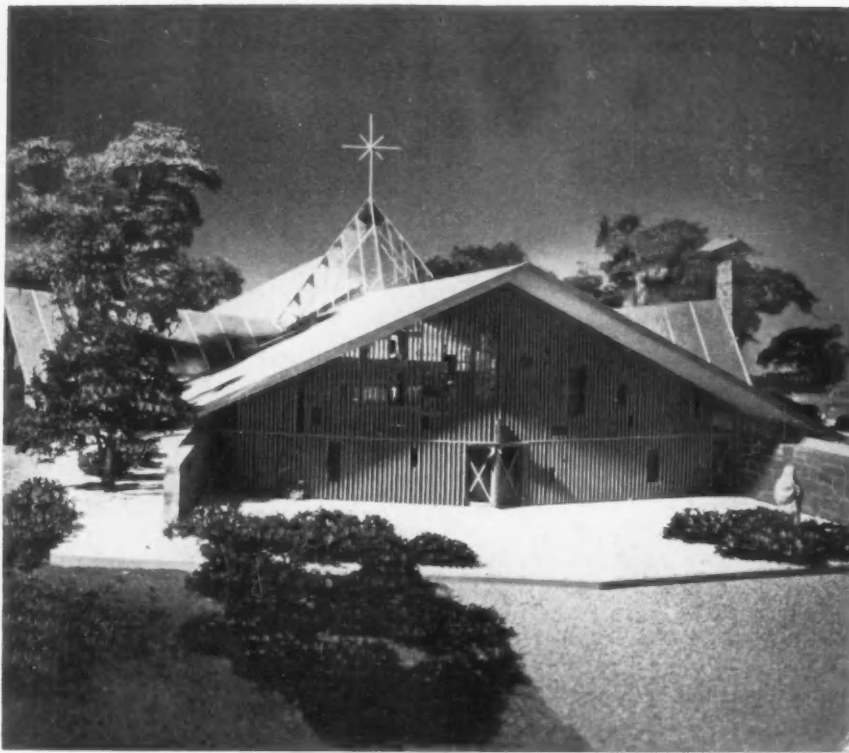
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*Religious Buildings for Today.*  
Edited by John Knox Shear,  
A.I.A., Editor-in-Chief, ARCHITECTURAL RECORD. F. W.  
Dodge Corp. (N. Y.) 1957. 183  
pp., illus., \$7.50

## CREATIVE NEW PATTERNS IN CHURCH ARCHITECTURE

BY JOHN OLIVER NELSON, Yale University Divinity School

IF IN THESE TEN YEARS we are building or radically rebuilding 70,000 places of worship at a cost of six billion, every signpost pointing committees and clergy and public to creative new patterns is urgently needed. In compiling *Religious Buildings for Today* from recent issues of ARCHITECTURAL RECORD, Editor John Knox Shear — even though doubtless tantalized by the great number of items he had to omit — has provided a satisfyingly suggestive and educative contribution to the whole subject.

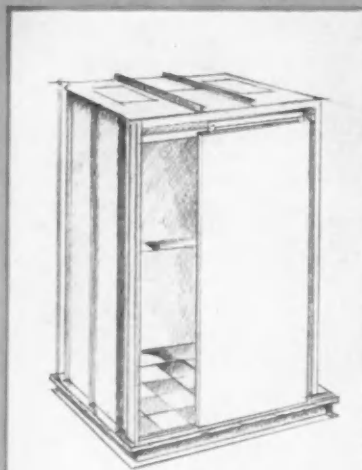
Notoriously, church architecture within past decades has lost the initiative in America which it has carried for many centuries. It succumbed to imitativeness, banality, or a too thorough merging with secular architecture. The trends documented in this volume are complete evidence that religious inspiration has again thrust forward the most distinctive, creatively functional structures of the time. Not slick copies of the past, not "faceless" duplications of the uniform rectilinear mode of today's factories, schools, office buildings, hospitals, and the rest, church architecture is sending forth new sur-

(Continued on page 62)



Above, *St. Francis of Assisi Church, Weston, Conn.* Joseph Salerno, Architect. Left, *St. Andrew's Church, Park Ridge, Ill.* Charles Edward Stadel & Associates, Architects; M. Dolan and H. Anderson, Associated Architects

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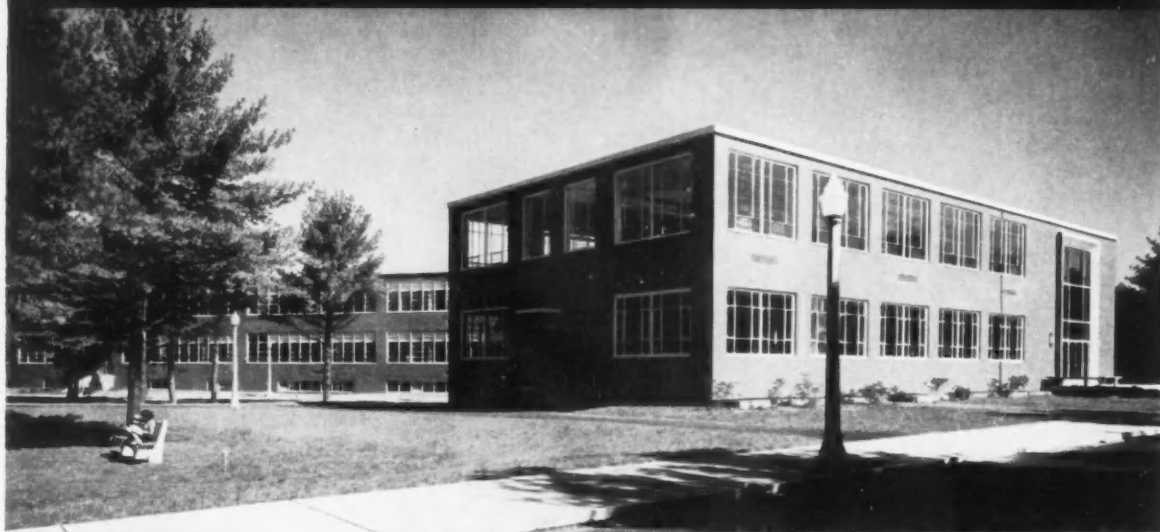
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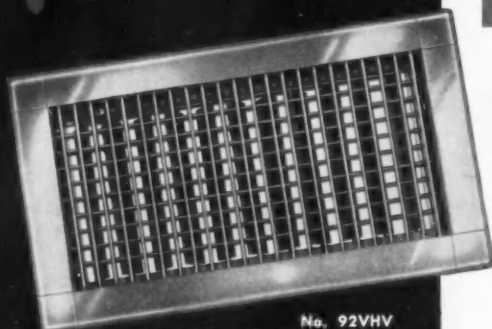


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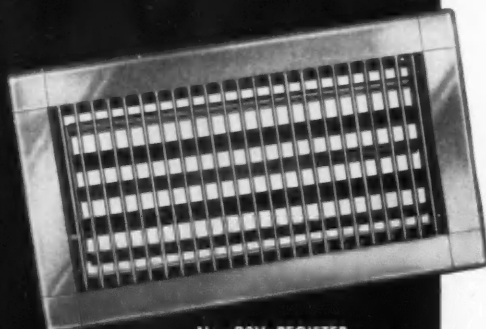
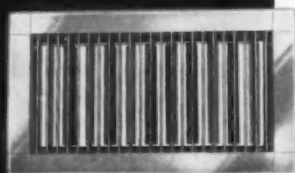
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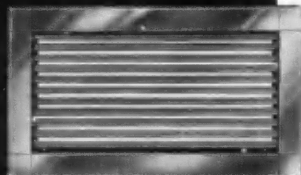
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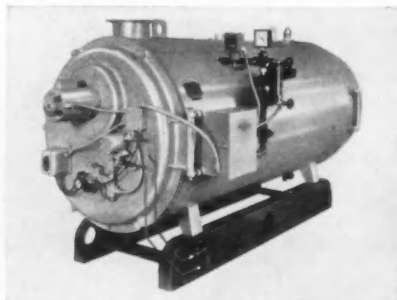
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## REQUIRED READING

(Continued from page 58)

prising shoots and even a few indisputable blossoms. This book points to some of the most arresting and practical of these.

Unlike some other approaches to the field, the emphasis here is not on the outlandish and bizarre but on good architecture in various lands and many media which can betoken a new level, a new "water table" of general taste. Even though the text is in many instances over-concise, letting the excellent pictures give the story, it weaves a setting of interpretation which is theologically important for most architects, and technically important for most church people. Particularly are Marvin P. Halverson's contributions, pointing to a new Protestant realization of what architecture can mean, a revealing part of the text. It is evident that Roman Catholic, Orthodox, Jewish, and Protestant building has all been vitally affected by new practices and self-analyses — the apparent effort to balance contributions from all these traditions becoming one of the most successful aspects of the book. Again, there are designs for large congregations and small, modest-income groups and wealthy ones, the hard-headed worshiper who "wants something that looks like a church," and the aesthetically urbane whose desire may be just the opposite.

For whom is such a volume most specifically useful? Most architects may have seen these designs one by one as the *RECORD* first presented them; to have them here in one 182-page volume provides a suggestive reference work. Most building committees and clergy setting out earnestly to secure distinctive housing for their worship and program need to become familiar with the best contemporary design in churches and synagogues; this is definitely the book for them. For both designer and client, the apposite doctrinal synopses — a brief but serious attempt to show the deepest spiritual concern of the various traditions — will be rewarding. The book is a long forward step in recognizing the strides which newly awakened religious architecture has been making.

## Technical References

### ATOMIC ENERGY FACTS

This 214 page soft-bound volume is a handbook on nuclear operations in the United States devoted to the peaceful uses of atomic energy. *Superintendent of Documents, US Government Printing Office, Washington 25, D. C., \$2.00.*

(More reviews on page 324)



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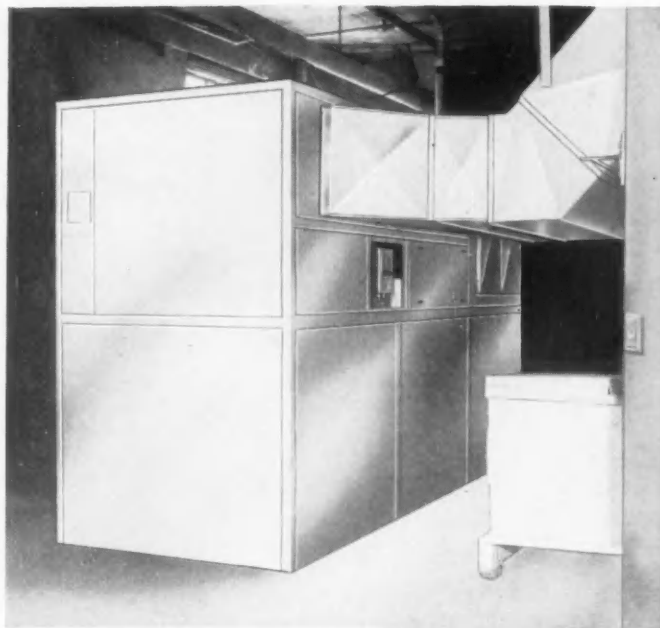
For full details see our catalog in Sweet's or contact a Wheeling warehouse or sales office.

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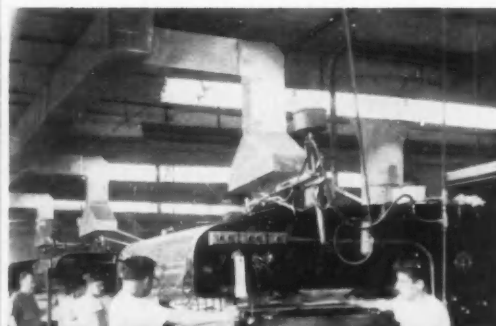
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**pre-engineered 'CPU' Air Conditioning Package**

by **DUNHAM-BUSH**

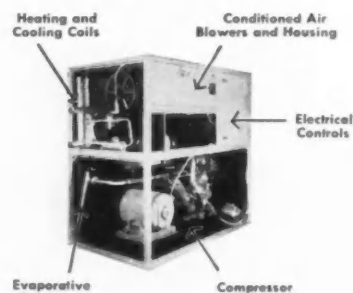
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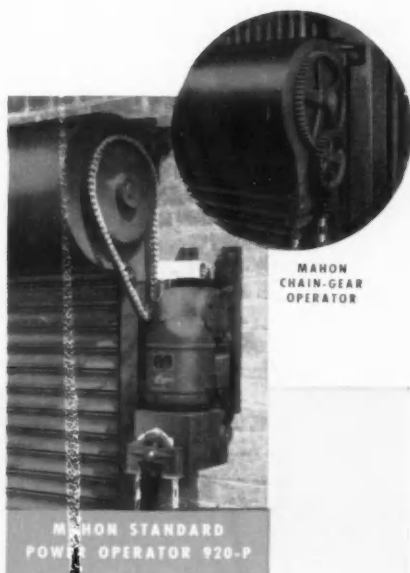
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*Manually, Mechanically or Electrically Operated*

Here is another multiple door installation where only rolling steel doors could meet the operating and security requirements . . . because, the six doors illustrated below are installed in openings at the ends of six production lines where operating space and positive protection against intrusion were primary considerations. Sixteen other Mahon Rolling Steel Doors are installed in this new, modern boat-building plant. No other type of door can match the space saving compactness and the operating convenience of a good, quick-opening, quick-closing, power operated rolling steel door . . . the vertical roll-up action is fast, requires no usable space either inside or outside the opening—no overhead tracks or other obstructions to restrict headroom and interfere with crane handling adjacent to the door opening. And no other type of door can give you the positive security, firesafety and permanence which is an inherent advantage in Rolling Steel Doors . . . all-metal construction reduces maintenance to a negligible factor, and assure a lifetime of continuous trouble-free service. When you buy a rolling steel door, it will pay you to check specifications carefully . . . you'll find that Mahon Rolling Steel Doors are built better to give you better service over a longer period of time—for instance, the galvanized steel in Mahon curtain slats is BONDERIZED and DIP-COATED with synthetic enamel which is baked on at 350° F. prior to roll-forming. This is just one of the extra-value features of Mahon Rolling Steel Doors . . . comparison will disclose many others that add up to a much better investment. See Sweet's Files for information, or write for Catalogue G-58.



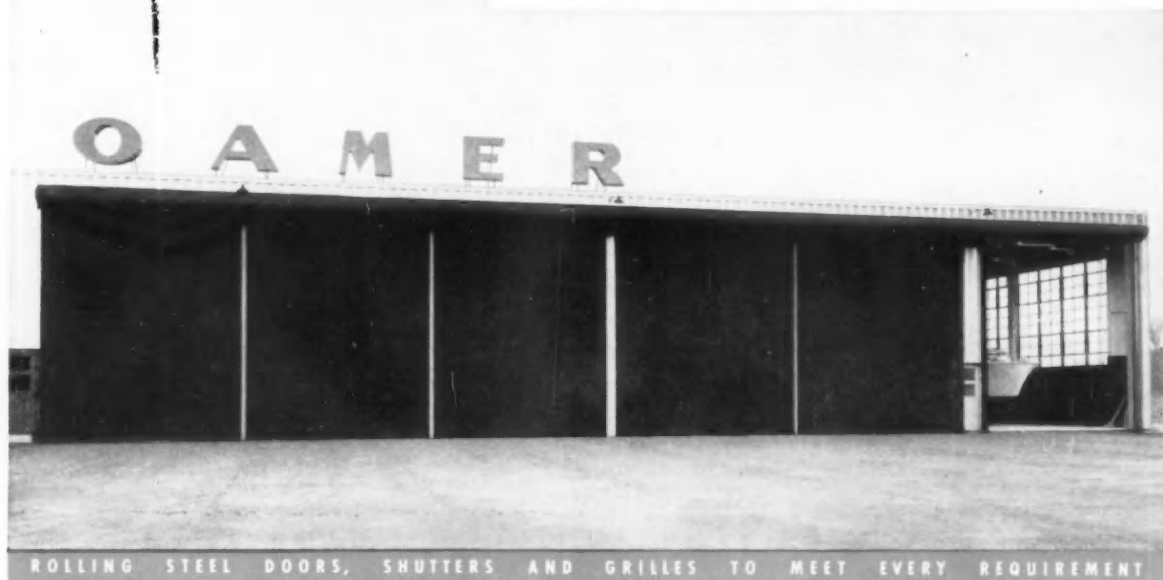
MAHON  
CHAIN-GEAR  
OPERATOR

MAHON STANDARD  
POWER OPERATOR 920-P

THE R. C. MAHON COMPANY • Detroit 34, Michigan

Sales-Engineering Offices in Detroit, New York and Chicago • Representatives in Principal Cities

Manufacturers of Rolling Steel Doors, Grilles, and Automatic Underwriters' Labeled Rolling Steel Fire Doors and Fire Shutters; Underwriters' Rated Fire Walls; Insulated Metal Curtain Walls; Electrified M-Floors; Acoustical and Troffer Forms; and Steel Roof Decks and Long Span M-Decks.



Six of Twenty-Two Mahon Rolling Steel Doors installed in a new plant for the Roamer Steel Boat Division of Chris-Craft Corporation, Holland, Michigan. Owen-Ames-Kimball Company, General Contractors.

# MAHON



It pays to use the  
masonry cement that's  
**"CLIMATE  
BLENDED"**

Variations in climate and weather, from hot and dry to cool and moist, in different parts of the country create differing masonry requirements.

To provide a masonry cement having the uniform qualities of plasticity, strength, yield, and water repellence regardless of where it is used, Ideal's network of 14 plants has developed an all new, special "Climate-Blended" Ideal Masonry Cement. This "mason's cement" is the result of thousands of tests of all types of cement, ingredient blends, and different grinds.

It is the contractor's best answer to the problems of cost and quality in any masonry job.

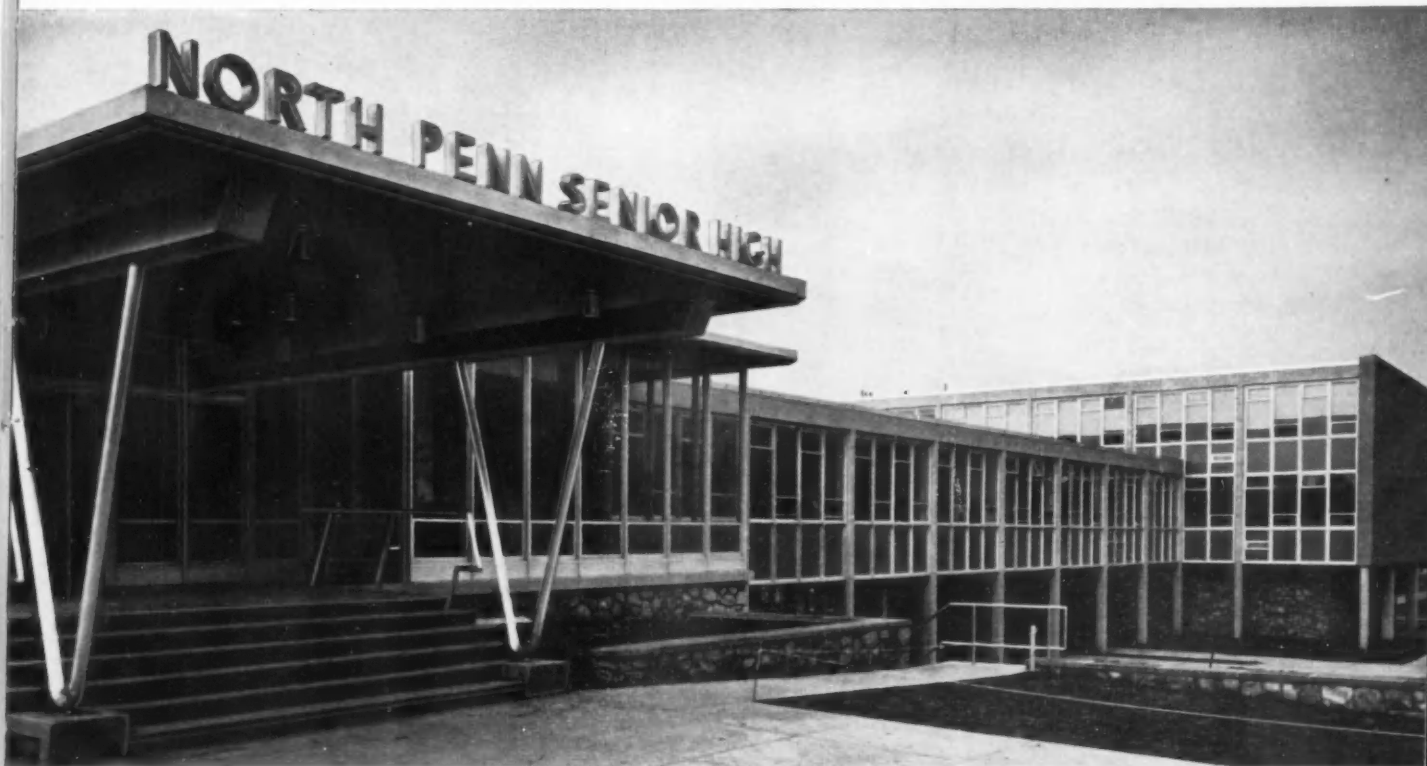


*First Choice with Masonry Contractors and Owners*

**IDEAL CEMENT COMPANY**  
DENVER, COLORADO

14 PLANTS AND 3 TERMINALS SERVING SOME OF THE MOST RAPIDLY GROWING AREAS OF THE NATION

**planned . . . for minimum maintenance**



**quality approved**  
**ALUMINUM**  
**WINDOWS**

**Aluminum Window Manufacturers Association**

**45 North Station Plaza, Great Neck, N. Y.**

Careful planning of schools, hospitals and commercial buildings calls for windows and window wall systems that *save* important maintenance dollars year after year.

"Quality-Approved" aluminum windows — double-hung, casement, awning, projected or sliding — are rust-proof, rotproof . . . never need painting or expensive maintenance . . . retain their modern appearance and operating efficiency for the life of the building . . . save money every year.

For latest copy of "Quality-Approved" window specifications, consult any manufacturer listed below, or write to Dept. AR-712.



**MEMBERS:** A.C.A. Window Corp., Lindenhurst, N. Y. • Adams Engineering Co., Inc., Miami, Fla. • Albritton Engineering Corp., Bryan, Tex. • The Wm. Bayley Co., Springfield, Ohio • Ceca Steel Products Corp., Chicago, Ill. • Crossly Window Corp., Miami, Fla. • Duralite Window Corp., Knoxville, Tenn. • Florida Windows, Inc., West Hollywood, Fla. • Michael Flynn Mfg. Co., Philadelphia, Pa. • Miami Window Corp., Miami, Fla. • Primalum, Beneda Div. Textron Corp., Nesquehoning, Pa. • Reynolds Metals Co. (Window Division), Louisville, Ky. • Stanley Building Specialties Co., North Miami, Fla. • J. S. Thorn Co., Philadelphia, Pa. • Truscon Steel Division (Republic Steel Corp.), Youngstown, Ohio • Universal Window Co., Berkeley, Calif. • Valley Metal Products Co., Plainwell, Mich. • Van-Russ Co., Inc., Hialeah, Fla. • Ware Laboratories, Inc., Miami, Fla. • Windalume Corp., Kenil, N. J. • Wisco Aluminum Corp., Detroit, Mich.

*Pictured above:* North Penn Senior High School, Lansdale, Penna. • *Architects:* Howell Louis Shay & Associates • *Contractor:* Wark & Co.

new safety!

LOCKWOOD

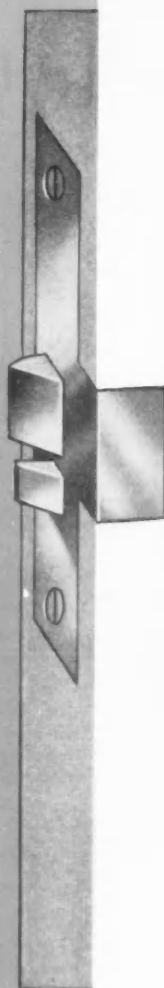
# LOCK 'N ROLL LATCH

- cannot be jammed by pressure on door
- actually "floats" with any light touch on crossbar



#### Attractive, Modern Outside Trim

Entrance handles, door pulls, knobs and escutcheon plates of attractive, modern design are available for outside trim as required.



"80 B" Series Mortise Type Devices



Safe exit, full security assured by

# LOCKWOOD

**LIGHT PRESSURE** on the crossbar immediately removes support of the multi-pivoted latch in its projected position. It then freely rolls into the lock case.

**SECURITY** is assured by the auxiliary bolt which is depressed and dogs the latch against end pressure, when door is closed.

Lockwood offers complete, new line of Rim, Mortise, Vertical and Concealed Devices, featuring . . .

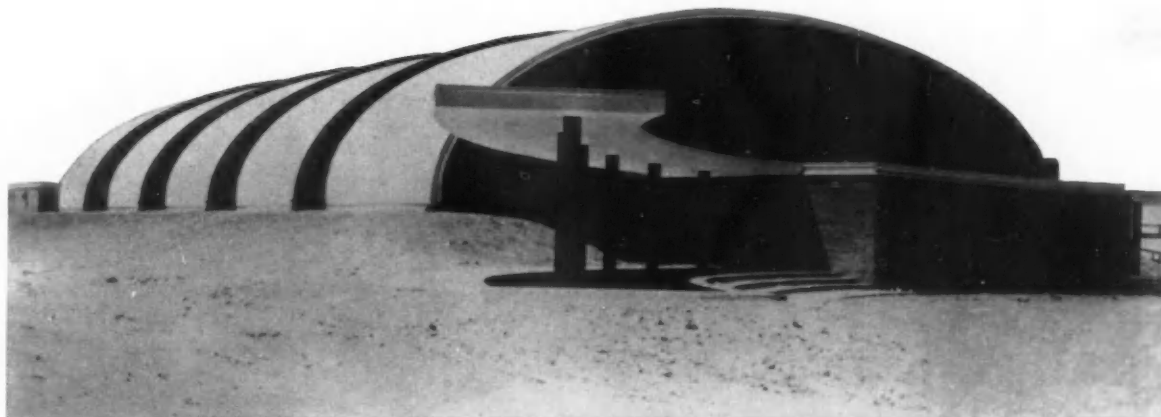
- Over 20 different functions
- Drop-forged arms for extra strength
- Neat, smooth case design: uniform dimensions and design
- New, streamlined outside trim
- Simplified installation
- Crossbar adjusts to variations in door width — no rivets, no drilling
- Roller strikes, hold-back features available

Write for brochure illustrating in detail the many exclusive features of Lockwood panic devices.

**LOCKWOOD HARDWARE MFG. CO., Fitchburg, Mass.**



## BUILDINGS OF TOMORROW ARE BEING WELDED TODAY—AT LOWER COSTS...



*Gymnasium in Willcox, Arizona; designed by Scholer, Sakellar & Fuller, Tucson, Arizona.*

### ARCHITECTS! ENGINEERS!

"Studies in Structural Arc Welding" are published regularly and sent at no cost to help you with design problems. The eleventh edition of "Procedure Handbook of Arc Welding Design and Practice", 1300 pages, 1100 illustrations, has 466 page section devoted to Design for Structural Arc Welding. \$3.00 postpaid in U.S.A. \$3.50 elsewhere. Write.

... because welded design is more easily adapted to dramatic new architectural concepts which combine functional beauty and economy of construction.

For example: this gymnasium which has no interior support to obstruct view or activity is made practical by the simplicity of welded design. Welded steel arch beams with tapered webs place the steel where it is needed and eliminate excess weight. Steel building panels which form the shell of the building are welded to the arch beams. This eliminates costly, time-consuming drilling and fastening.

This is just one of many examples of how modern architects are turning to welded design to make their creative ideas structurally and economically possible.

### THE LINCOLN ELECTRIC COMPANY

Dept. 2612 • Cleveland 17, Ohio

*The World's Largest Manufacturer of Arc Welding Equipment*

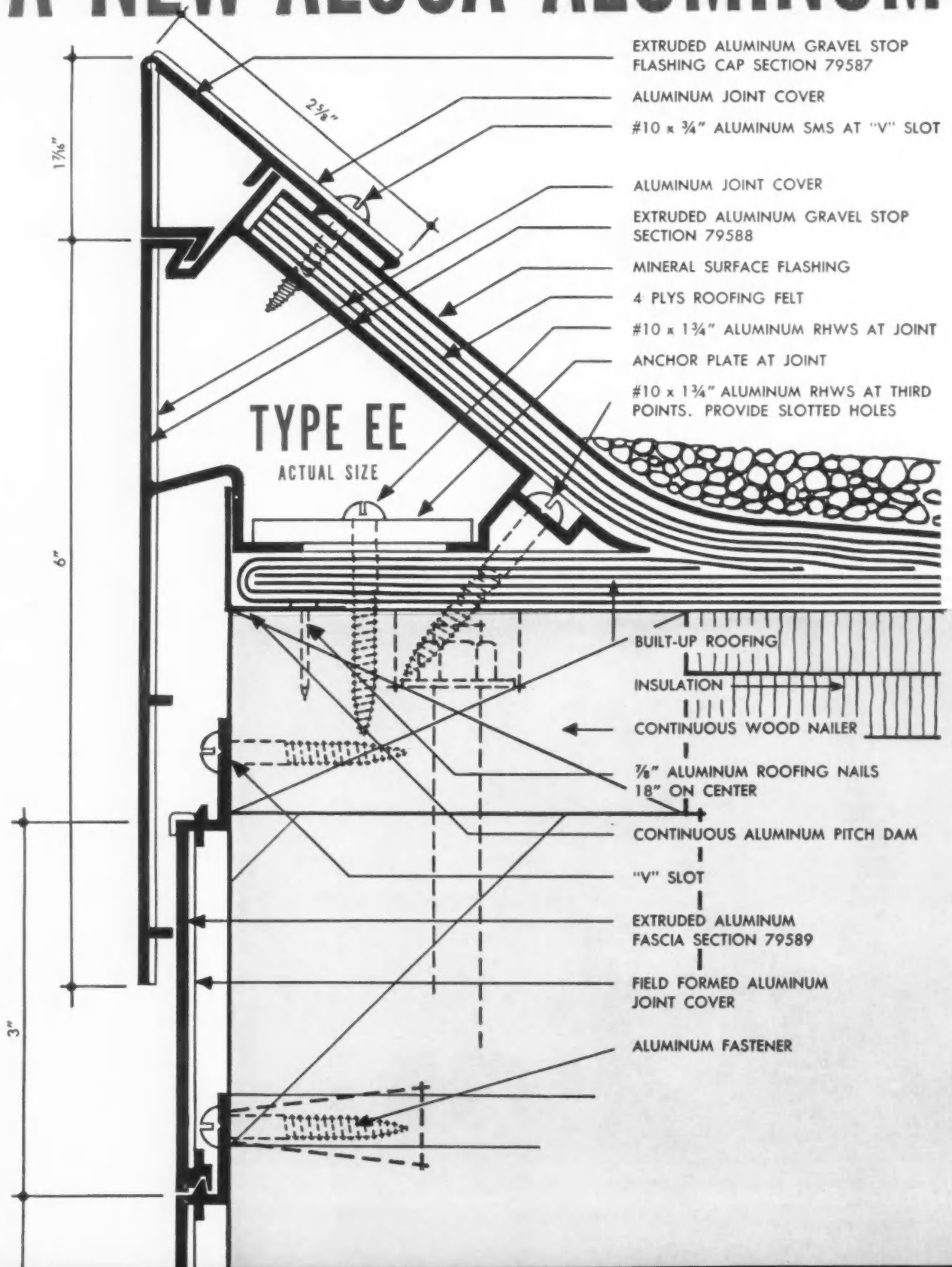
**W**hen  
welded  
design

**H**as  
simpler  
construction

**Y**et saves  
time and  
material

**WHY**  
aren't all your structures  
designed for welding?

# A NEW ALCOA ALUMINUM



# GRAVEL STOP

## that answers all the problems of sound design

- Concealed joint covers
- Integral cant strip
- Fascia extension provides smooth fascia line
- A 2-piece self-aligning system that is rapid and convenient to install

*Detail drawing in actual size at left*

All the inherent advantages of aluminum edging for built-up roofing are found in new Alcoa® Gravel Stop Type EE: long life, low maintenance and low cost—tested and proved in the severest industrial and seacoast atmospheres.

In detail, this new gravel stop Type EE has concealed joint covers, integral cant strip and provision for fascia extensions. The joint cover is inserted in slots behind the gravel stop fascia to assure a smooth fascia line. The cant strip is an integral part of the gravel stop, making it leakproof and furnishing ample strength to prevent break-through of the flashing. Fascia ex-

tensions may be used to achieve a deep fascia band if desired, and a soffit trim is available for overhang and marquees. The use of a pitch dam prevents roofing compounds from marking the walls. This 2-piece system forms a self-aligning unit. Application of the flashing cap over the cant strip flashing assures rapid, convenient installation.

For complete specifications and data about gravel stop Type EE, and other Alcoa Gravel Stops, Coping and Roofing Products, call your nearest Alcoa sales office or write Aluminum Company of America, 1888-M Alcoa Building, Pittsburgh 19, Pa.

*Your Guide to the Best  
in Aluminum Value*

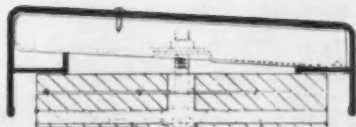
NEW! "ALCOA THEATRE"  
Exciting Adventure  
Alternate Monday Evenings



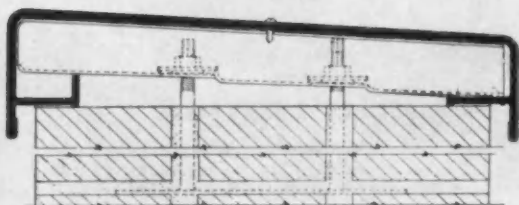
### Coping

Alcoa's Coping Systems for 8" and 12" walls have newly developed anchor gutter bars which anchor the extrusion firmly, assuring watertight joints. Joint covers and corner miters continue the clean contours of the main unit and provide a complete coping system.

**TYPE G-8**



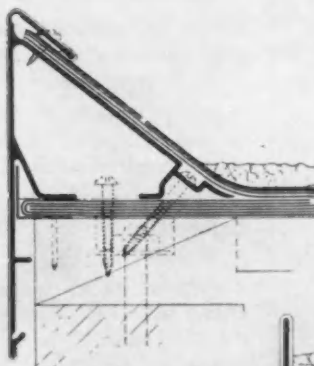
**TYPE G-12**



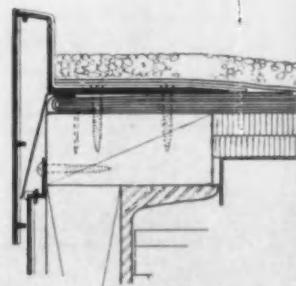
### Other Alcoa Aluminum Gravel Stops

Alcoa Gravel Stop Type E combines gravel stop, cant strip and fascia band in a rugged, watertight, firmly anchored unit that makes an ideal terminal cap for bonded roofing. Type F features an integral fascia and is a simply installed roof terminal unit at minimum cost. Type FF, with fascia extensions or soffit trim, has a smooth, uninterrupted eave line and is designed with a concealed joint cover.

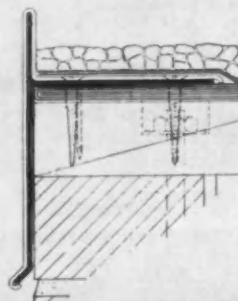
**TYPE E**



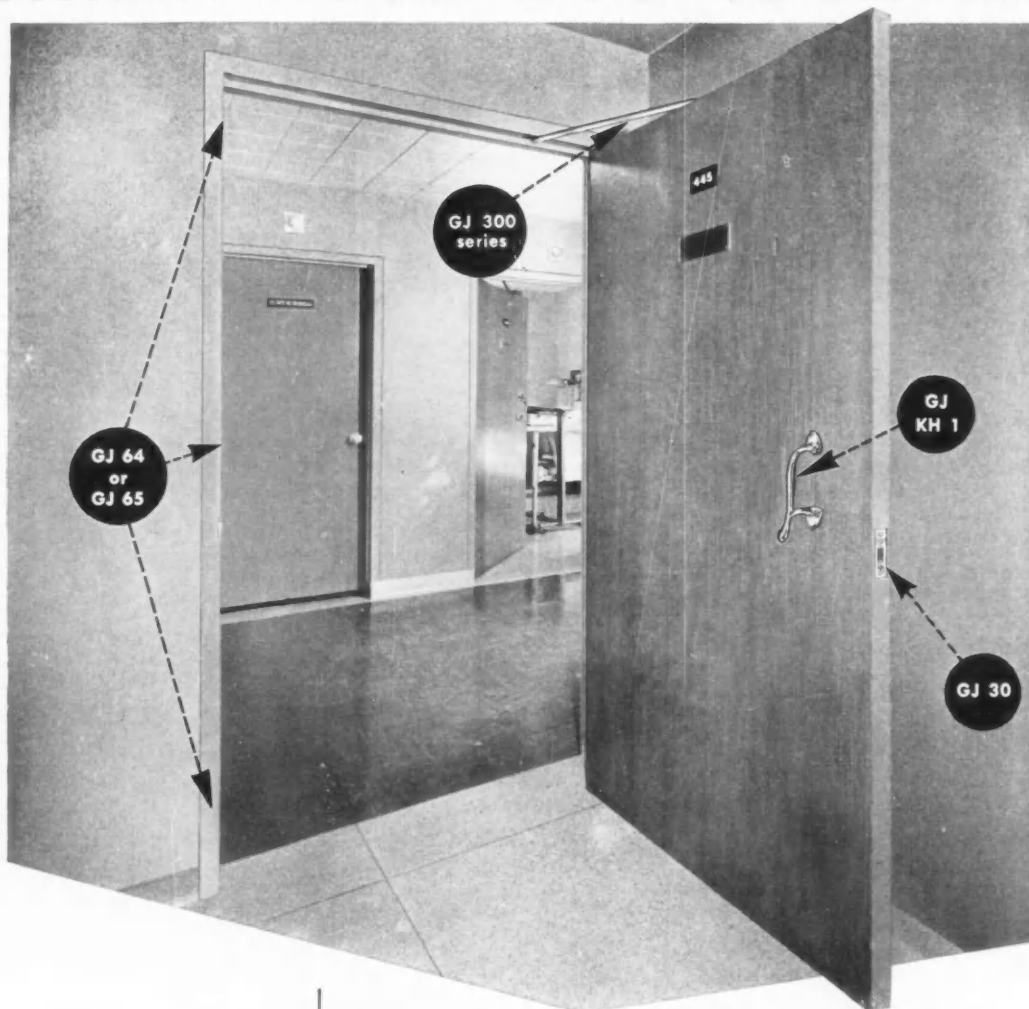
**TYPE FF**



**TYPE F**



# *an ideal specification for silent, efficient* **PATIENT ROOM DOOR CONTROL**



This ideal specification for patient room doors is used in such outstanding hospitals as:

Kaiser Foundation Hospital, Los Angeles, Calif.  
Wolff & Phillips, Portland, Oregon — architects

Oak Park Hospital, Oak Park, Illinois  
Shaw, Metz and Dolio, Chicago — architects

Providence Hospital, Washington, D.C.  
Faulkner, Kingsbury & Stenhouse, Washington, D.C. — architects

Rhode Island Hospital, Providence, R. I.  
Shepley Bulfinch Richardson & Abbott, Boston, Mass. — architects

*All above hardware can be quickly installed on existing patient room doors.*

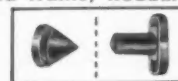
## **"shall have GLYNN-JOHNSON . . .**

**GJ 300 series CONCEALED (or surface mounted) OVERHEAD FRICTION TYPE DOOR HOLDER."** (Nurse may set door at any desired degree of opening for ventilation or privacy. Door cannot slam open or shut.)

**"GJ KH 1 COMBINATION HAND AND ARM PULLS to be mounted back to back as a pair."** (Convenient for opening door from either side with sterile hands or when carrying loaded trays.)

**"GJ 30 ROLLER LATCH."** (Eliminates disturbing latch "clicking" sound. Replaceable rubber roller *silently* engages dirt-free strike. Latching pressure adjustable.)

**"THREE GJ 64 for metal frame (or GJ 65 for wood frame) RUBBER SILENCERS."** (Form pneumatic air pockets to absorb shock or noise of closing and create constant latch tension . . . no door rattling.)



write for HOSPITAL DOOR CONTROL brochure E-4

**GLYNN-JOHNSON CORPORATION**

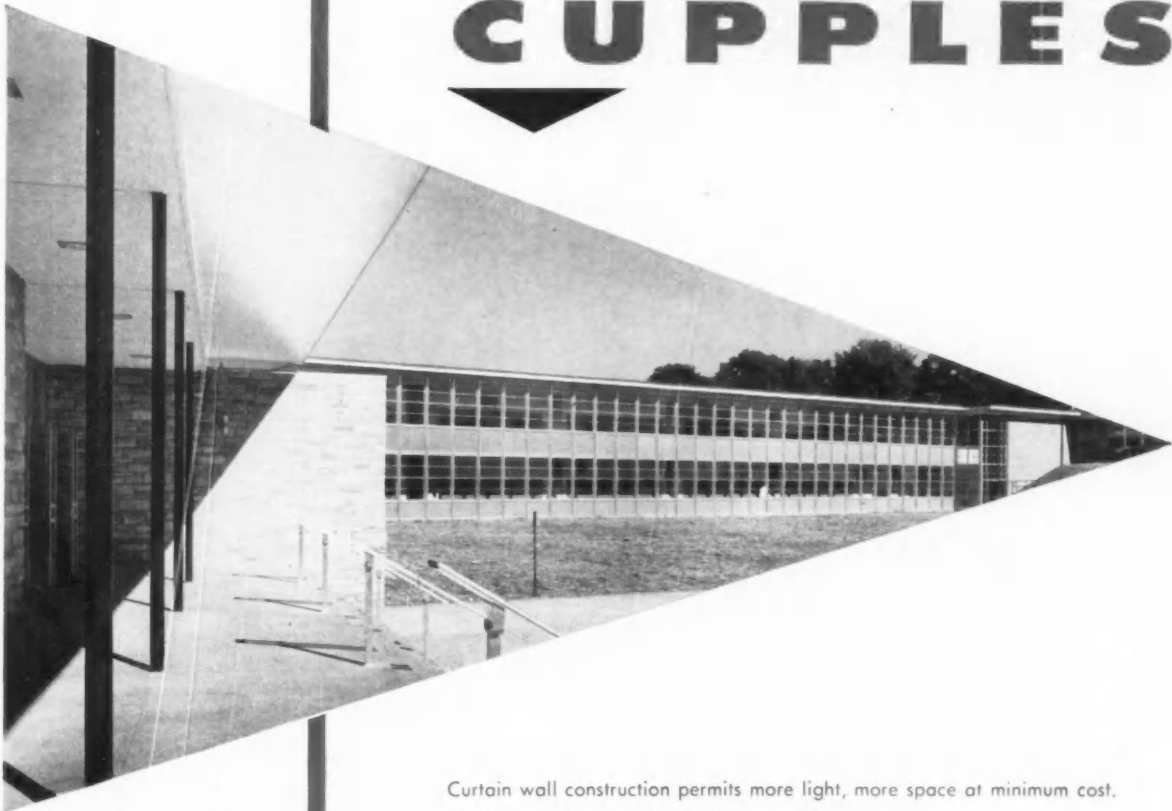
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ANOTHER OF THE MANY MODERN SCHOOLS WITH

## ALUMINUM CURTAIN WALLS BY **CUPPLES**



McCLUER JUNIOR HIGH SCHOOL  
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Architect, St. Louis

Curtain wall construction permits more light, more space at minimum cost. That's why it's perfect for today's new schools.

The Cupples' aluminum curtain wall system for the McCluer School consists of tubular vertical mullions, double-hung windows and blue porcelain enamel panels. Interior aluminum trim at windows and aluminum sub-sills, also by Cupples.

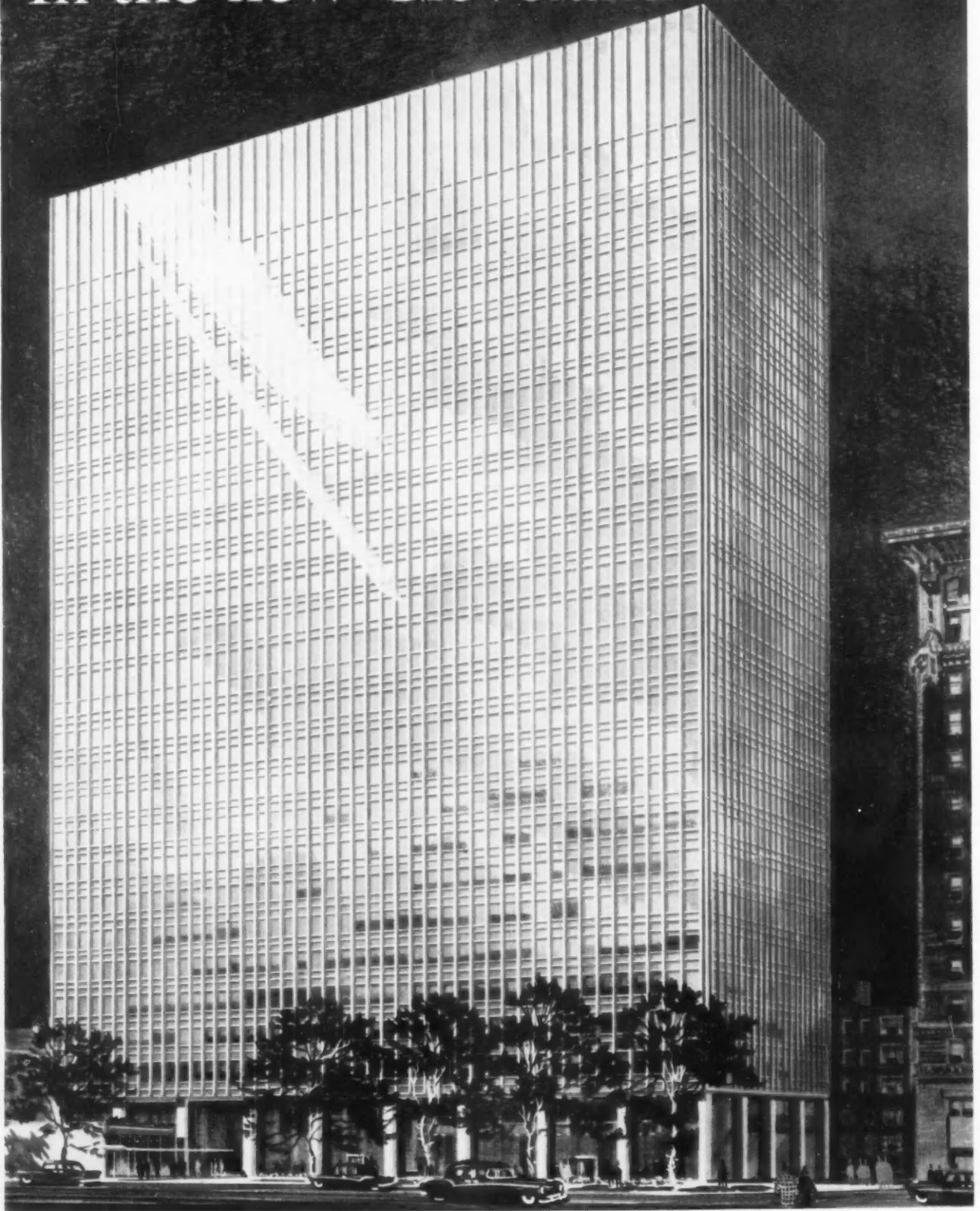
From single-story schools to multi-story commercial buildings, Cupples is foremost in curtain wall design, fabrication and erection. Cupples, also, is one of the nation's largest manufacturers of aluminum windows, doors, Alumi-Cooustic grid systems and special ornamental products.

Our catalogs are filed in Sweet's.



PRODUCTS CORPORATION  
2658 South Hanley Road • St. Louis 17, Missouri

# In the new Cleveland Electric



# Illuminating Company Building

concrete joist floors are reinforced with

## American Welded Wire Fabric

Owner: 55 Public Square, Inc., Cleveland, Ohio  
Architects: Carson and Lundin, New York, New York  
Associate Engineer: McGeorge, Hargett and Associates, Cleveland, Ohio  
General Contractor: George A. Fuller, New York, New York  
Concrete Contractor: George Paverini, New York, New York

**REMEMBER CLIENTS WILL ASK**

***"is it Reinforced"***

**95 TONS OF REINFORCEMENT**—American Welded Wire Fabric Reinforcement—were used in the concrete joist floors of the new Cleveland Electric Illuminating Company Building in Cleveland, Ohio. American Welded Wire Fabric gave the thin topping slab of the concrete joist floors extra tensile strength to resist temperature and flexural stresses. It makes a strong, durable floor . . . and is extremely easy to install.

**THE HIGH-YIELD-STRENGTH STEEL MEMBERS**, closely spaced in American Welded Wire Fabric, also effectively distribute any unusual concentrated load that might occur between joists.

Write for complete technical information about Welded Wire Fabric, Super-Tens Stress Relieved Wire and Strand for pre-stressed concrete, and other quality construction materials manufactured by American Steel & Wire.

## USS American Welded Wire Fabric

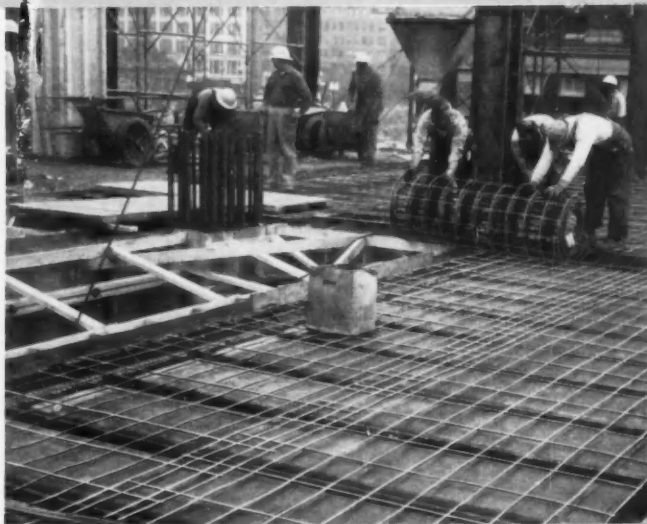
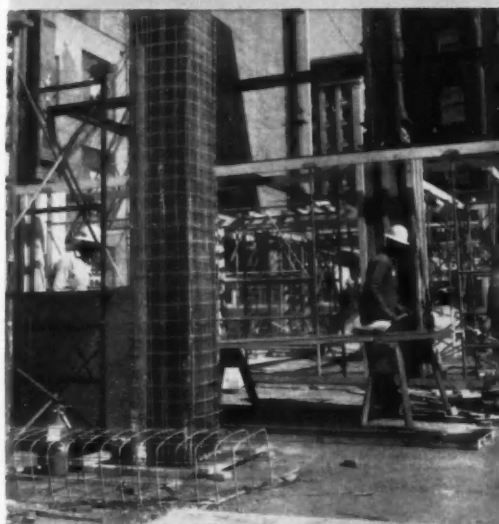
AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors  
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors  
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**Other Uses** for American Welded Wire Fabric include reinforcement of ground slabs, beam-and-slab floors, and walls. It meets all applicable ASTM specifications.

**60" x 150' rolls** of 6 x 12, 4 x 4 gage American Welded Wire Fabric Reinforcement were used in the topping slabs of the concrete joist floors. American Welded Wire Fabric comes in a style and size for every concrete reinforcement application . . . is easily installed.



UNITED STATES STEEL



## DOES THE ROOF INSULATION YOU SPECIFY MEET THESE 10 BASIC REQUIREMENTS?

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| 1. Rugged—hard to damage   | 5. Withstands heavy traffic         |
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|  | 10. Billions of feet in use         |

## IT WILL IF YOU SPECIFY JOB- PROVED CELOTEX BRAND ROOF INSULATION BOARD

You get the "BASIC 10" requirements when you specify the CELOTEX brand . . . assurance of job-proved performance . . . and then some! You know what to expect of Celotex Roof Insulation . . . not how it SHOULD, but how it DOES perform. That's what we mean when we say Celotex is "PERFORMANCE-PREDICTABLE!"



### AVAILABLE IN **3** TYPES

Dependable "REGULAR" . . . asphalt-coated "PRESEAL" . . . and exclusive "CHANNEL-SEAL" . . . all 3 in a variety of thicknesses.

# CELOTEX

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## ROOF INSULATION

*See 1957 Sweet's Architectural File Catalog 10a Ce. Write for specifications, Samples, Information Manual*

THE CELOTEX CORPORATION, 120 SOUTH LA SALLE STREET, CHICAGO 3, ILLINOIS



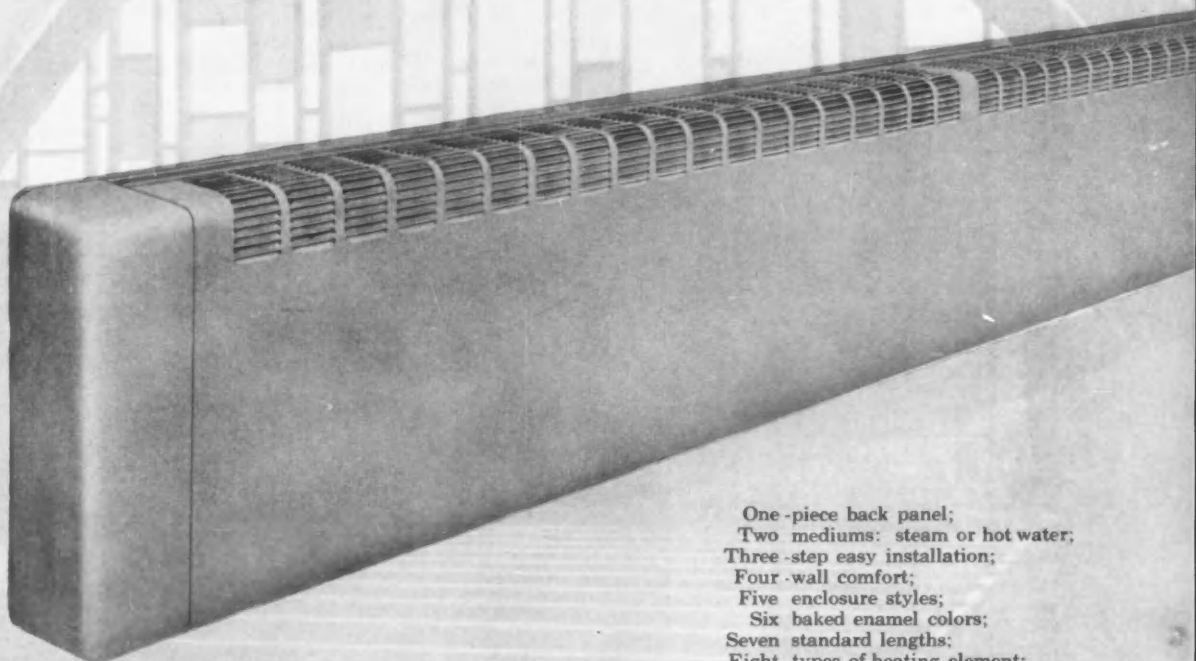
# Sill-line goes to CHURCH...

Not all kinds of heating equipment look well in church.

So when Charles W. Pollitt of Philadelphia designed  
the St. Paul Reformed Episcopal Church in Oreland, Pa.,  
he chose Nesbitt Sill-line to grace its modern interior.

Sill-line offered the perimeter protection needed  
and its long trim lines conformed to the contemporary design.

You could do some nice things, too, with this  
"world's most beautiful perimeter radiation."



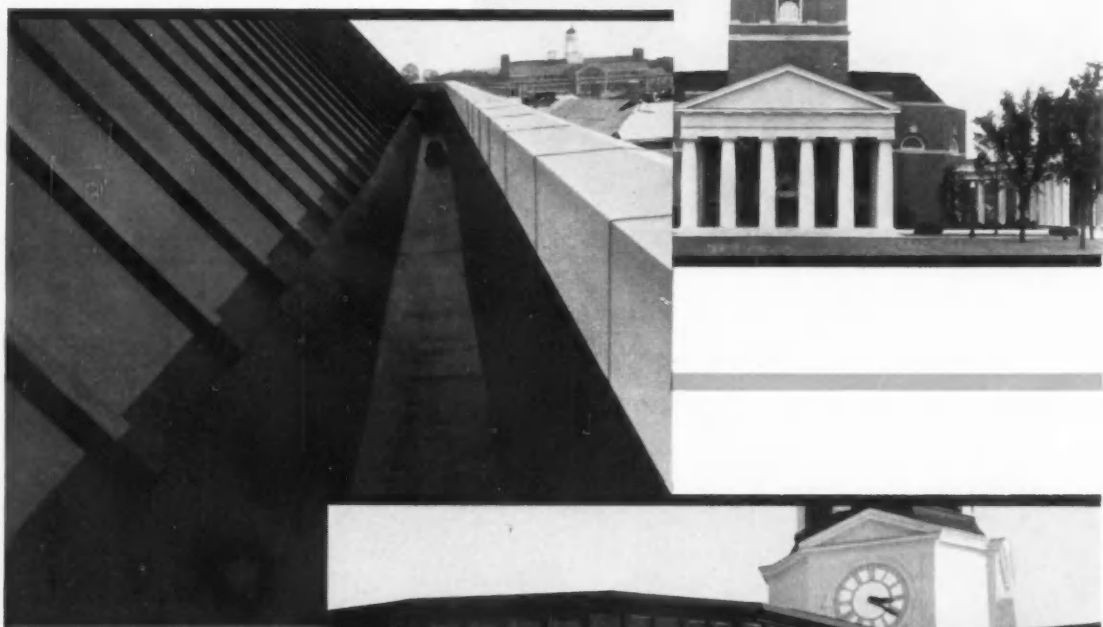
One-piece back panel;  
Two mediums: steam or hot water;  
Three-step easy installation;  
Four-wall comfort;  
Five enclosure styles;  
Six baked enamel colors;  
Seven standard lengths;  
Eight types of heating element;  
Nine matching accessories;  
Ten-strike for value!

## Nesbitt

### **SILL-LINE RADIATION**

Made and Sold by John J. Nesbitt, Inc.  
Philadelphia 36, Pa. Publication 30-1

**BUILT TO LAST**—Here you see section of batten seam roof with parapet flashing and gutter. Note neat, clean installation that can be made when Revere Copper is installed by skilled workmen according to recommendations made in Revere's 110-page Brochure, "COPPER AND COMMON SENSE." Shown in background is one of the expansion joints which is used to insure gutter against buckling and cracking when copper expands and contracts with temperature changes.



**CLOSE-UP OF SECTION** of batten seam roof on Chapel Building which was installed according to recommendations made in Revere's Brochure, "COPPER AND COMMON SENSE," as specified by the architectural firm of LARSON AND LARSON, Winston-Salem, N. C.

J. FREDRICK LARSON who has earned a splendid reputation for the fine work he also has done at Colby, Bucknell, Lehigh and other colleges says that, to his way of thinking, the "COPPER AND COMMON SENSE" Brochure is a "must" for every architect and contractor.



**"The 400,000 lbs. of sheet copper used on the buildings of Wake Forest College emphasize the matchless characteristics of this ageless metal in building construction."**

*Says FRANK COX, President  
Cox Roofing Company, Winston-Salem, North Carolina*



"One of the beauties of copper," continued Mr. Cox, "is that it is equally at home in the traditional or the most modern designed building.

"Of course, the things about copper which are most appreciated by sheet metal contractors like myself are its workability, the ease with which it is soldered and formed, the fact that its enduring qualities have been proved for so many centuries that its wearability is never questioned. It's the kind of material on which you can safely stake your reputation, which is the kind of material I like to work with."

Leading architects, too, are partial to this centuries-tested metal because of its extreme flexibility in design and its ready acceptance among those who pass on specifications. In writing specifications they have found there is no "or equal" for copper.

An added service to architects and sheet metal men is

the marking of all Revere Sheet and Strip Copper with the correct gauge and temper in water-soluble ink.

Ask your distributor to show you. Also ask him about the neat-appearing, weather-tight, easy-to-place Revere-Keystone 2-Piece Cap Flashing\*.

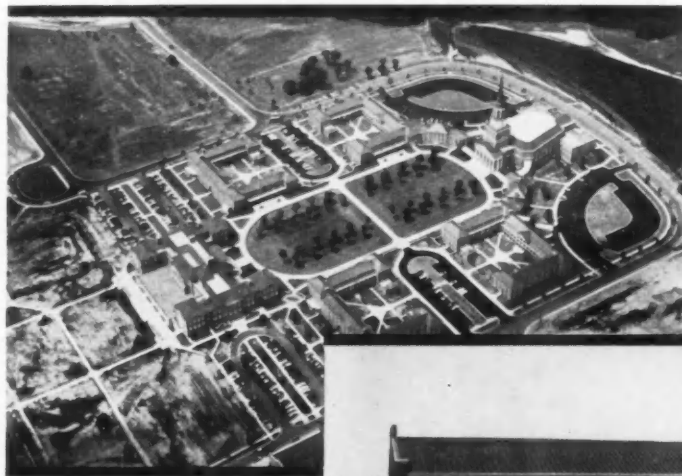
\*Patented. No. 2,641,203 Other Pats. Pend.

## REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

Mills: Rome, N.Y.; Baltimore, Md.;  
Chicago, Clinton and Joliet, Ill.;  
Detroit, Mich.; Los Angeles, River-  
side and Santa Ana, Calif.; New  
Bedford, Mass.; Brooklyn, N.Y.;  
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Sales Offices in Principal Cities.  
Distributors Everywhere.



**CHAPEL AND GYMNASIUM BUILDINGS** at Wake Forest College alone took 125,000 lbs. of Revere Sheet Copper for roof, gutter and flashing work. Copper used on all buildings amounted to some 400,000 lbs., most of which was supplied by Revere.





ARCHITECTS: Crane, Kiehler & Kellogg and  
O'Dell, Hewlett & Luckenbach  
GENERAL CONTRACTOR: O. W. Burke Company  
LATHING AND  
PLASTERING ENGINEERS: Berti Plastering Company

## Penmetal quality products used throughout handsome new Henry & Edsel Ford auditorium



Quality was a first consideration in the construction of this recently dedicated auditorium, centered in Detroit's Civic Plaza. Its gem-like exterior combines white marble and faceted Swedish blue pearl granite. The interior: A wealth of sleek plaster over Penmetal MESHTEx lath.

Construction of the suspended ceiling is interesting. Due to the spans involved, Penmetal LIGHTSTEEL structural channels were suspended from roof members by double-bolted strap hangers with special stirrups designed by Berti Plastering Company. Furring was

attached to these channels and MESHTEx lath, in turn, wired to the furring—then plaster was applied.

Destined to become a focal point for cultural activities, this highly attractive example of modern auditorium design can accommodate operas, television and radio broadcasts and recording sessions, as well as the usual civic events.

The Henry & Edsel Ford auditorium offers further proof of a trend: More and more important architecture incorporates Penmetal quality products.

### PENN METAL COMPANY, INC.

General Sales Office: 40 Central Street, Boston 9, Mass.

Plant: Parkersburg, W. Va.

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PM-152



a name to remember

◀ Lather wire-tying Penmetal MESHTEx lath to 3/4" Penmetal furring channel. Penmetal LIGHTSTEEL, 6" unpunched structural channels, spaced 4 feet o.c., can be seen above. Penmetal partition studs, at right, were used for curtain walls.



# ACP Architectural Alodine®

## PROCESS FOR ALUMINUM



- PROTECTIVE
- DECORATIVE
- GLARE-REDUCING

Architectural Alodine is protective because it further improves the good weathering characteristics of aluminum. It provides unusually effective protection at the seaside and in industrial areas. Architectural Alodine is decorative because it chemically forms an attractive green color which enhances the appearance of the aluminum. The coating formed is integral with the metal and the color is sunfast. Architectural Alodine is glare-reducing because the chemically formed coating materially reduces the natural reflectivity of aluminum. And the process is inexpensive, compared to other commercial finishes. Write for samples of aluminum which has been Architectural Alodine treated—no obligation.

### AMERICAN CHEMICAL PAINT COMPANY

Ambler 22, Pa.

Detroit, Mich. • St. Joseph, Mo.  
Niles, Calif. • Windsor, Ont.

*New Chemical Horizons for Industry and Agriculture*



# INSULATED METAL WALLS are Skillfully



Eastland Shopping Center in the northeast section of Detroit, Michigan. 56,000 Sq. Ft. of Mahon Insulated Metal Curtain Walls and 48,000 Sq. Ft. of Mahon Steel Roof Deck were employed in the construction of this outstanding and colorful structure. Victor Gruen & Associates, Architects. O. W. Burke Co., Gen. Contrs.



## ELECTRIFIED M-FLOORS

Mahon M-Floors provide electrical availability in every square foot of floor surface—safeguard buildings against electrical obsolescence in years to come.



## ACOUSTICAL and TROFFER FORMS

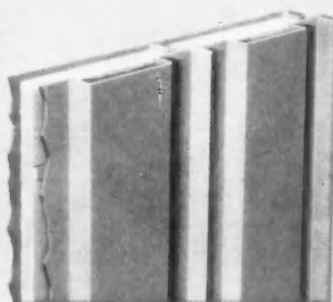
Provide an Effective Acoustical Ceiling with Recessed Troffer Lighting—Serve as Permanent Forms in Concrete Joist and Slab Construction of Floors and Roofs.



## CONCRETE FLOOR FORMS

Mahon Permanent Concrete Floor Forms in various types meet virtually any requirement in concrete floor slab construction over structural steel framing.

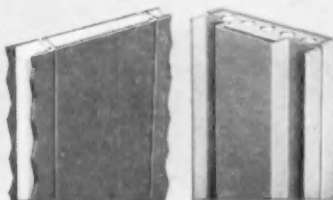
# Employed to Lend Color and Attractiveness to Exterior of Mammoth Shopping Center!



**MAHON FLUTED WALL**  
FIELD CONSTRUCTED



**MAHON RIBBED WALL**  
FIELD CONSTRUCTED



**FLUSH      FLUTED**  
**MAHON PREFAB WALL PANELS**

The low-cost permanence and attractiveness of Insulated Metal Curtain Walls are today being designed into an ever broadening range of building types. In the Eastland Shopping Center, illustrated at the left, you see an unusual building in which Mahon Metal Curtain Walls in harmonizing colors were used extensively in combination with other materials to produce an attractive and colorful exterior.

Some of the country's outstanding architects have employed Mahon Insulated Metal Curtain Walls skillfully and to good advantage, costwise, in producing striking exterior design effects in office buildings, shopping centers, schools, armories, military barracks, sports arenas, parking garages, warehouses, industrial buildings of all types—including powerhouses, and some important monumental buildings.

Metal Curtain Walls with exterior plates of embossed or colored aluminum, stainless steel, or cold rolled steel painted, employed in combination with brick, ornamental stone, glass block or other materials offer unlimited possibilities in architectural treatment of exterior design. Bright metal, or colored metal, provides the designer with the means of individualizing and creating distinctiveness in almost any type of building.

In Mahon Insulated Metal Walls, vertical joints are invisible—symmetry of pattern is uninterrupted across the wall surface . . . and, the field constructed walls can be erected up to sixty feet in height without a horizontal joint. These two design features, which are extremely important from an appearance standpoint, were engineered into Mahon Insulated Metal Curtain Walls to give you a finer appearing wall surface with a continuous pattern free from unsightly joints.

You'll want to investigate these Mahon "better look" features before you select a metal curtain wall for any building.

See Sweet's Files for information or write for Catalogue W-58.

**THE R. C. MAHON COMPANY • Detroit 34, Michigan**  
Sales-Engineering Offices in Detroit, New York and Chicago  
Representatives in all Principal Cities

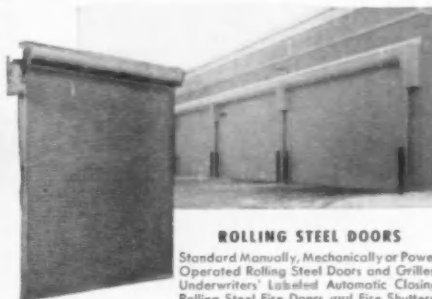
# MAHON



**STEEL ROOF DECKS**  
Standard Double Rib, Wide-Flange Double Rib, and Long Span M-Decks, which can be furnished with perforated surface and fitted to provide an efficient acoustical ceiling.



**UNDERWRITERS' RATED FIRE WALLS**  
Mahon Metalclad Fire Walls carry two Hour Rating by Underwriters' Laboratories, Inc., for Use as Either an Interior Dividing Fire Wall or an Exterior Curtain-Type Fire Wall.



**ROLLING STEEL DOORS**  
Standard Manually, Mechanically or Power Operated Rolling Steel Doors and Grilles. Underwriters' Labeled Automatic Closing Rolling Steel Fire Doors and Fire Shutters.



3

**FOLLOW THROUGH SERVICE.**  
Jenn-Air's sense of responsibility never diminishes. Fifty-two national sales offices with 66 warehouse stocks—field engineers everywhere—provide the fastest over-night service throughout the U.S.A., the easiest-to-obtain consultation.

1

**FOLLOW THROUGH ENGINEERING.**  
From drafting board to final product, a single policy dictates Jenn-Air engineering: Jenn-Air exhausters must be better designed. Primary objective is—how well can we make the products? . . . not how cheaply or how quickly.



2

**FOLLOW THROUGH MANUFACTURING.**  
Jenn-Air exhausters are constructed of ageless spun aluminum and stainless steel—motors lubricated for 10 years of normal operation. Each unit must pass final scrutiny of exacting vibronic Eye to guarantee minimum vibration—low noise level.



## WHY IS JENN-AIR BETTER THAN "OR EQUAL"?

**FOLLOW THROUGH ENGINEERING—MANUFACTURING—SERVICE  
MAKE THE BIG DIFFERENCE IN JENN-AIR POWER EXHAUSTERS**

In the specification of materials or products that go into a building a commonly-used term is "or equal." Because of the principles behind Jenn-Air Quiet-Tested roof and wall exhausters, we like to believe there is *no equal* to Jenn-Air. The Jenn-Air creed demands:

***Jenn-Air FOLLOW THROUGH has no "or equal."***



Jenn-Air Quiet-Test Roof Exhauster, with U-Spring Cushion Suspension Mounting. Note low contour design.



**JENN-AIR PRODUCTS COMPANY, INC.**

1101 Stadium Drive • Indianapolis 7, Indiana





## Pegs are popular

Here's a popular-priced version of always-appealing pegged oak flooring. The walnut pegs of this Bruce Ranch Plank Floor are inserted at the factory. The beautiful finish is factory-applied, too, for economy and durability. Alternating  $2\frac{1}{4}$ " and  $3\frac{1}{4}$ " strips with beveled edges help capture the appearance of a costly random-width plank floor. Bruce Ranch Plank is laid just like any strip floor.

Write for color booklet. See our catalog in Sweet's Files.  
E. L. BRUCE CO.  
Memphis 1, Tennessee



**Bruce**  
Ranch Plank  
Floor  
*Naturally Beautiful*

Furniture by Knoll Associates, Inc.  
Photo by Hedrich-Blessing

# How You Benefit From MACOMBER

## *Quality Control*

THESE MACOMBER PRODUCTS



HAVE BEEN  
PRODUCED UNDER  
CONTINUOUS  
RESIDENT  
INSPECTION



PITTSBURGH TESTING LABORATORY



### **V-BEAMS**

FOR SPANS 7 TO 48 FEET

### **V-GIRDERS**

FOR SPANS 40 TO 96 FEET

### **V-LOK INTERLOCKING STEEL FRAMING**

SEND FOR CATALOGS

Modern design—quality workmanship—clean, rugged appearance—all backed up by the impartial inspection of a nationally known independent testing laboratory . . . these are some of the extras contractors expect when they buy Macomber Structural Framing Products.

Quality Control is a daily program in the Macomber plants. Progress through research is normal here. Our aim is to give the purchaser greater value at no increase in cost. You will be interested in how well we are succeeding—how you benefit every time a job goes—Macomber.

INVESTIGATE THESE MACOMBER PRODUCTS FOR THE BEST IN DESIGN, WORKMANSHIP AND APPEARANCE



# MACOMBER

CANTON  
1, OHIO



On new tract site, Mr. Byrnes (left) discusses telephone service with Mr. Charles Wirtle of Cincinnati and Suburban Bell Telephone Company

## "Concealed telephone wiring helps me stay on top of the market"

— says Mr. Chas. F. Byrnes, Builder, of Cincinnati, Ohio

"I believe in getting the newest features into my homes," says Mr. Byrnes. "One of those features is concealed telephone wiring. It helps me stay on top of the market."

"Telephone outlets are a definite sales point. They're one of the first things we emphasize when talking with customers. Also, we mention concealed wiring and multiple outlets in our advertising, because we know they're conveniences

that people are looking for. I wouldn't think of building a house today that didn't have telephone facilities built into it."

• • •

Your nearest Bell Telephone business office will help you with concealed wiring plans. For details on home telephone wiring, see Sweet's Light Construction File, 8i/Be. For commercial installations, Sweet's Architectural File, 32a/Be.

Working together to bring people together

BELL TELEPHONE SYSTEM





**New Ultracoustic Ceiling Board** captures all the rich, classic beauty of Travertine marble . . . opens up a whole new range of architectural design possibilities!

Photo courtesy Nelson Gallery-Atkins Museum (Nelson Fund), Kansas City, Mo.



**New Ultracoustic Ceiling Board** is the **only** ceiling board made of long, strong, textile-type glass fibers. It's incombustible and permanent. It's rigid — yet can be bent without breaking!

## for suspended acoustical ceilings, an incombustible New type of Glass Fiber Board

It's *incombustible*. It's *beautiful*. It's *tops* in acoustical (and thermal) efficiency. It won't break or chip. It's easier to apply because it's flexible in application, yet rigid in place. It's available in 24" x 48" x  $\frac{3}{4}$ " and 24" x 24" x  $\frac{3}{4}$ " panels *right now*.

It's Gustin-Bacon's Ultracoustic Ceiling Board, a completely new and different kind of glass fiber insulation board for use with all standard grid suspended ceiling systems of T-bar type. Ultracoustic is the only ceiling board that possesses all these desirable properties:

**TRAVERTINE FINISH**, now available for the first time in a glass fiber acoustical board. Ultracoustic's sur-

face finish is an off-white with uniformly random-fissured texture.

**SUPERIOR ACOUSTICAL EFFICIENCY.** NRC rating of .85.

**INCOMBUSTIBILITY.** Class "A" rating and listed by Underwriters Laboratories as incombustible.

**IMMUNITY TO DAMAGE.** Ultracoustic is the only ceiling board of long, textile-type glass fibers. It's rigid *but not brittle*—won't chip or break. Its resilient toughness makes it more resistant to damage in handling, shipping and in service than other acoustical materials.

**HIGH LIGHT REFLECTANCE** . . . averages 85%.

**EASY APPLICATION.** Ultracoustic can be bent without breakage during application, is easy to cut and fit around diffusers or other obstructions.

**OUTSTANDING THERMAL EFFICIENCY** — an important bonus benefit. "K" factor is .23 btu at 75° F. mean temperature.

### WRITE TODAY FOR SAMPLES AND DETAILS

Far better than words and pictures, a sample of this new ceiling board will tell you how far ahead of the times it is. Write today for samples, prices and complete information.

**GUSTIN-BACON**  
*Manufacturing Company*

210 W. 10th St., Kansas City, Mo.

Thermal and acoustical glass fiber insulations • Pipe couplings and fittings • Molded glass fiber pipe insulation



**New Ultracoustic Ceiling Board** goes up faster, easier. It need not be handled with special care, for it won't flake, break or chip.





# Ultracoustic Ceiling Board

Patent Applied For



## ANOTHER PRESTRESSED CONCRETE STRUCTURE



Let  
the architects  
tell you why  
they used  
prestressed  
concrete for  
this hospital

CONSULT ROEBLING... First in the U.S.  
with prestressing and tensioning elements



Architects—Sherwood, Mills and Smith  
Consulting Engineers—Marchant and Minges  
General Contractor and Fabricator of prestressed  
slabs—A. F. Peaslee, Hartford, Conn.

A typical staff meeting of junior and senior partners in the conference room at Sherwood, Mills and Smith. Standing are Thomas Norton, junior partner, and Willis N. Mills. Seated, reading from left to right are: Carrell S. McNulty, Jr., Gray Taylor, A. Raymond von Brock, Lester W. Smith and Thorne Sherwood.

We quote Sherwood, Mills and Smith, architects, of Stamford, Connecticut: "In designing the new Litchfield County Hospital in Winsted, Connecticut, we used prestressed concrete principally for economy. Our structural engineers, Marchant and Minges of West Hartford, Connecticut, designed a series of flat lift-slabs which were kept thin by the use of prestressing. This permitted lower floor-to-floor heights, thus saving on cubage. It also meant less weight of concrete and steel. *Actual construction costs have borne out their original thinking.*" (Italics ours.)

We've emphasized the last line of this quote because it contains most of

the elements that are contributing to the rapid growth and acceptance of prestressed concrete as a building method. Economy may be what you require, construction speed may be your first requisite or maintenance the first consideration. In any case, you should consider prestressed concrete as the best means to meet your needs.

We shall be glad indeed to give you details on prestressed concrete and its existing successes in virtually every type of structure. Any means of communication to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will bring a prompt and fully documented reply.

**ROEBLING**

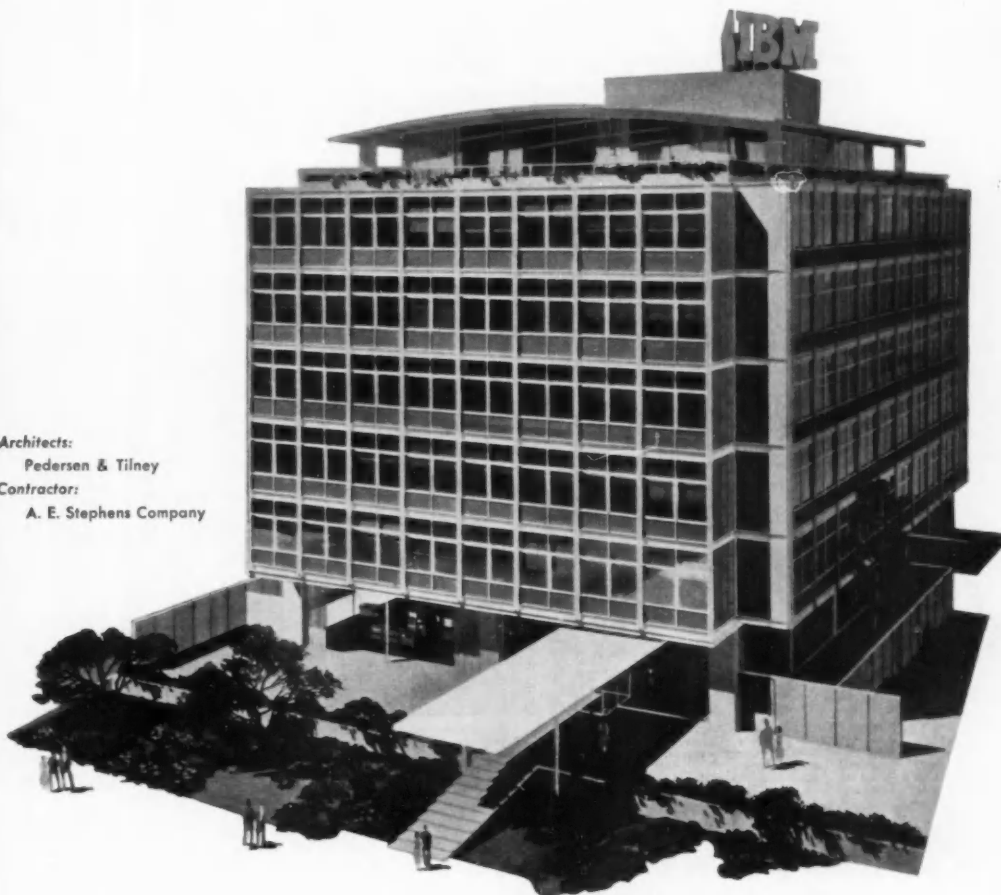
Branch Offices in Principal Cities  
Subsidiary of The Colorado Fuel and Iron Corporation



# CURTAIN WALLS WITH ALUMINUM REVERSIBLE WINDOWS *by* GENERAL BRONZE

FOR NEW I.B.M. OFFICE BUILDING, HARTFORD, CONN.

Architects:  
Pedersen & Tilney  
Contractor:  
A. E. Stephens Company



"CURTAIN WALLS by GENERAL BRONZE" is more than just a phrase. Like the hallmark you find on fine silverware, it has become a mark of quality recognized throughout the entire construction industry. More than that, it is a sure indication that the architect, the contractor and the owner recognize that the quality of their completed building can be no better than its component parts. And that's why so many of America's finest new buildings feature "Curtain Walls by General Bronze."

As the foremost producer of curtain walls, windows and architectural metalwork in either aluminum, bronze or stainless steel, General Bronze is always ready to serve you. See our catalogs in Sweet's.



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CORPORATION • GARDEN CITY, N.Y.

PERMATITE DIVISION—Custom-built Windows, Architectural Metal Work and Revolving Doors. ALWINTITE DIVISION—Stock-size Aluminum Windows.  
BRACH MFG. CO. DIVISION—Multel. T. V., Radio and Electronic Equipment. STEEL WELDMENTS, INC. DIVISION—Custom fabrication in steel and iron.

IN INSTITUTIONAL BUILDINGS  
MULTI-APARTMENTS  
DORMITORIES - SCHOOLS  
HOUSING PROJECTS

**GLIDE-ALL®** *Sliding Doors*

are Specified for Spacious Living



Here GLIDE-ALL Sliding Doors provide decorative panels for the generous storage areas in the bedrooms and halls of this apartment—one of hundreds in the Lake Meadows Multi-apartment project in Chicago. Architects: Skidmore Owings & Merrill. Contractors: Turner Construction Co.



A compact wardrobe unit, one of hundreds in Butterfield Hall on the campus of Michigan State University. This is a typical example of GLIDE-ALL Door installations in many University dormitories across the country. Architect: Ralph R. Calder, Detroit, Michigan.



Wherever maximum closet space in a confined area is desirable, GLIDE-ALL Doors make it practical and economical—like in this example of a remodelled guest room in the Sheraton-Lincoln Hotel, Indianapolis, Indiana.

### REASONS WHY:

**Provide More Storage Space** Where floor space is at a premium floor-to-ceiling GLIDE-ALL Sliding Doors provide the most accessible, easy-to-use storage facilities.

**Quality Appearance — Operation — Service** Modern design, durable construction and smooth operation are features of GLIDE-ALL Doors that appeal to architects and builders from coast-to-coast.

**Greater Economy** The simple installation of GLIDE-ALL Sliding Doors saves construction time and materi-

als—and the efficient production methods used in making them assures the lowest unit cost. On the job adjustment, for perfect, smooth, operation, is quick and simple and positive—an important factor where multiple installations must be efficient and trouble-free.

Whether your building plans require two or two thousand units of storage space, in any type rooms, you too will profit by specifying GLIDE-ALL Sliding Doors—in 8' floor-to-ceiling or standard 6'8" heights, from 36" to wall-to-wall widths.

Get the complete details . . . see Sweets Files or write Plant nearest you.

GLIDE-ALL DOORS ARE A PRODUCT OF

**WOODALL INDUSTRIES INC.**

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CHICAGO, 3514 Oakton St., Skokie, Ill.  
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*This modern office effectively illustrates the functional and esthetic application of Armstrong Cork Company's Arrestone acoustical ceiling tiles.*

## Something to look up to... acoustical ceiling tiles of WEIRZIN®

Acoustical ceiling tiles of Weirzin benefit you in a number of ways, both practical and esthetic.

First, Weirzin Electrolytic Zinc-Coated Steel Sheets provide unparalleled corrosion resistance. That's because the zinc-to-steel bond is so tight, even piercing operations cannot make these tiles flake or peel. And since there's no room for rust, Weirzin tiles are *really* washable.

Second, Weirzin panels are not only easily installed, but easily removed when air conditioning ducts and electrical outlets require servicing.

Third is Weirzin's excellent affinity for paint. Weirzin, when chemically

treated, can be painted over and over again to blend with any decor. There is no underfilm corrosion. And each time it's painted, throughout its lifetime of use, the smooth paint job Weirzin takes is another reflection of your good judgment.

Rust-free, washable, easily installed, paintable, economical. No wonder today's quality manufacturers of steel ceilings specify Weirzin Electrolytic Zinc-Coated Steel!

Find out how well Weirzin will fit your needs. Write today for the free booklet giving you all the facts—Weirton Steel Company, Dept. Q-26, Weirton, West Virginia.



**WEIRTON STEEL  
COMPANY**

WEIRTON, WEST VIRGINIA

a division of





*Here's why architects Brown & Marx*

## specified Butler for this beautiful shopping center in Kenosha, Wisconsin



Robert F. Brown



John N. Marx



In-process shot of Kenosha project

Design a top quality structure on a modest budget—that was the tough assignment handed Chicago Architects Brown and Marx by the Town & Country Shopping Center.

The assignment was accomplished with the Butler Building System. In this system, a strong load-bearing Butler rigid frame and a weather-tight, die-formed Butler metal roof are the core of the building. Pre-engineering insures that these components fit together perfectly for fast, low-cost assembly. Exceptional economy and superior quality control are assured by mass production.

Around this core, Architects Brown and Marx designed the handsome structure pictured above. The question uppermost in their minds was how the use of pre-engineered and mass-produced Butler components would affect their

design freedom. So they were pleased to find that the Butler Building System in no way hampered style, but rather made an interesting study. They were able to exercise imagination and skill in enclosing the rigid frame components in non-load bearing curtain walls of traditional construction materials, and in so doing achieve dynamic composition.

The shopping center consists of two low rigid frame Butler buildings 40' apart. One is a 100' x 140' supermarket, the other a 100' x 100' hardware store. The area between is covered to provide space for two additional stores.

"This was our first experience with the Butler System," says Mr. Brown. "But not our last."

For details on the lowest-cost way to build well, see your Butler Builder. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings."



### BUTLER MANUFACTURING COMPANY

7427 East 13th Street, Kansas City 26, Missouri

Manufacturers of Buildings • Oil Equipment • Farm Equipment • Dry Cleaners Equipment • Outdoor Advertising Equipment • Custom Fabrication  
Sales offices in Los Angeles and Richmond, Calif. • Houston, Tex. • Birmingham, Ala. • Atlanta, Ga. • Kansas City, Mo. • Minneapolis, Minn. • Chicago, Ill. • Detroit, Mich.  
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# STAINLESS STEEL MAKES THE DIFFERENCE

...its effect on  
modern construction

Resistance to *all* the major causes of deterioration, faster and more economical construction because of prefabricated parts, and appearance that "looks like new" for the life of the building make stainless steel popular with architects, contractors and owners alike.

Stainless steel keeps changing to meet specific needs, too. For example, there are more than 30 different types, plus a variety of finishes—decorative textures, surface tones and colors. Stainless needs little care—simple cleaning keeps it bright—*thus minimizing maintenance costs for the normal life span of the building.*

For more facts, write ELECTROMET—leading producer of more than 100 alloys for the metal industries, including chromium and manganese used for making stainless steel. Ask for the booklet: "Architectural Uses of the Stainless Steels." Address: ELECTRO METALLURGICAL COMPANY, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y. *In Canada:* Electro Metallurgical Company, Division of Union Carbide Canada Limited, Toronto.

**METALS DO MORE ALL THE TIME  
...THANKS TO ALLOYS**

**Electromet**  
FERRO-ALLOYS AND METALS



The terms "Electromet" and "Union Carbide" are trade-marks of Union Carbide Corporation.



Freedom from the damaging effects of heat, water, wind, ice and corrosive atmospheres plus low maintenance make stainless steel buildings look better, last longer and cost less!



## Bethlehem Slabform used in constructing floors of new Philadelphia apartment building

In constructing the floors of this apartment building near City Line Avenue, in Philadelphia, shown here during construction, the builders used Bethlehem Slabform, a sturdy, permanent steel base and form for poured floors over steel joists.

Bethlehem Slabform helped to make construction both simple and rapid, resulting in savings in time and cost, and a sturdy installation.

By eliminating the sag that occurs with flexible centerings, Slabform resulted in a saving of  $\frac{1}{2}$  in. or more of concrete. Finishing operations could be started sooner, because of the solidity of the steel form.



Concrete leakage was prevented, greatly reducing clean-up costs. "Incipient cracking," a common cause of trouble with flexible centering,

was eliminated. And because water could not run off during curing, the finished concrete was measurably stronger.

Further, Bethlehem Slabform is so rigid that it provided a safe working platform for all trades, yet could be cut to fit around openings using ordinary tin shears.

Slabform may be fastened to joist chords by any of these three methods: Bethlehem clips, self-tapping screws, or welding.

**BETHLEHEM STEEL COMPANY**  
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation, Export  
Distributor: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL





Building parts instead of pieces . . .



# ALUMINUM WINDOWS and CURTAIN WALLS

in modular sizes



UALCO 34 AM Awning Window with  
UALCO 25 AMH Awning Hopper

❄ Outstanding economy for architects: UALCO Modular Windows save money by helping to eliminate error, by reducing drafting time.

❄ Outstanding economy for builders: UALCO Modular Windows cut construction time and cost, help eliminate waste. UALCO Double Hung, Integral Fin Casement, Verti-Slide, and Horizontal Sliding Windows have integral exterior trim fin for quick, one-man installation.

The following UALCO Aluminum Windows and all four series of UALCO Curtain Wall are available in modular sizes (4" module) at no extra cost, for installation in any construction: Awning, Awning Hopper, Intermediate Projected, Double Hung, Casement, Casement Hopper, Horizontal Slider, Verti-Slide, Glass Block Ventilator. Sweet's 3a, 5a, 17a

Sou Sou Sou

*Pioneers in modular window research and manufacture.*



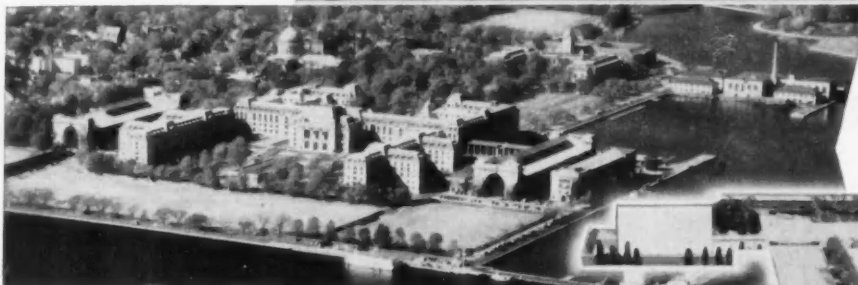
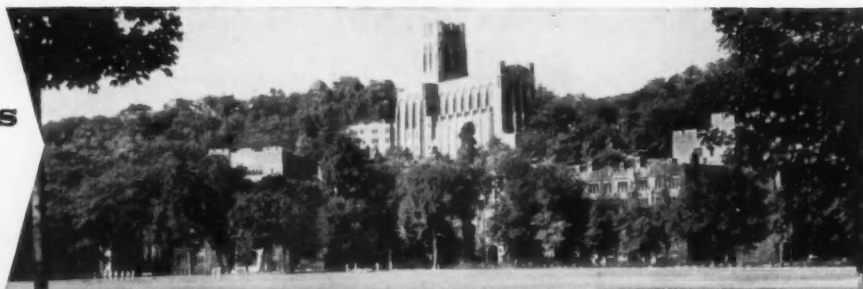
**SOUTHERN SASH SALES & SUPPLY CO., INC.**

S H E E F F I E L D , A L A B A M A

WORLD'S LARGEST MANUFACTURER OF ALUMINUM WINDOWS



**UNITED STATES  
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ACADEMY**



**UNITED STATES  
NAVAL  
ACADEMY**

**UNITED STATES  
AIR FORCE  
ACADEMY**



Photographs courtesy United States Military Academy, United States Naval Academy, and United States Air Force Academy.

## **Ric-wil underground piping systems serve ALL three...West Point, Annapolis and NOW...the new Air Force Academy**

West Point and Annapolis have been serviced by Ric-wil piping systems as far back as 1931. Since 1946 alone over 15,000 feet of Ric-wil prefabricated piping has been purchased for the nation's top military colleges. Installation of Ric-wil piping at the new 17,500 acre United States Air Force Academy has already been installed. Ric-wil is indeed proud of the part they have played in serving these military academies for a period of over twenty-five years.

*Quality Piping Systems . . .*

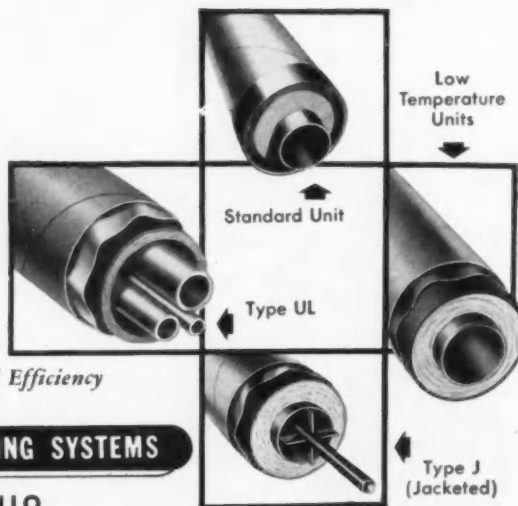
*. . . of Exceptionally High Thermal Efficiency  
SINCE 1910*

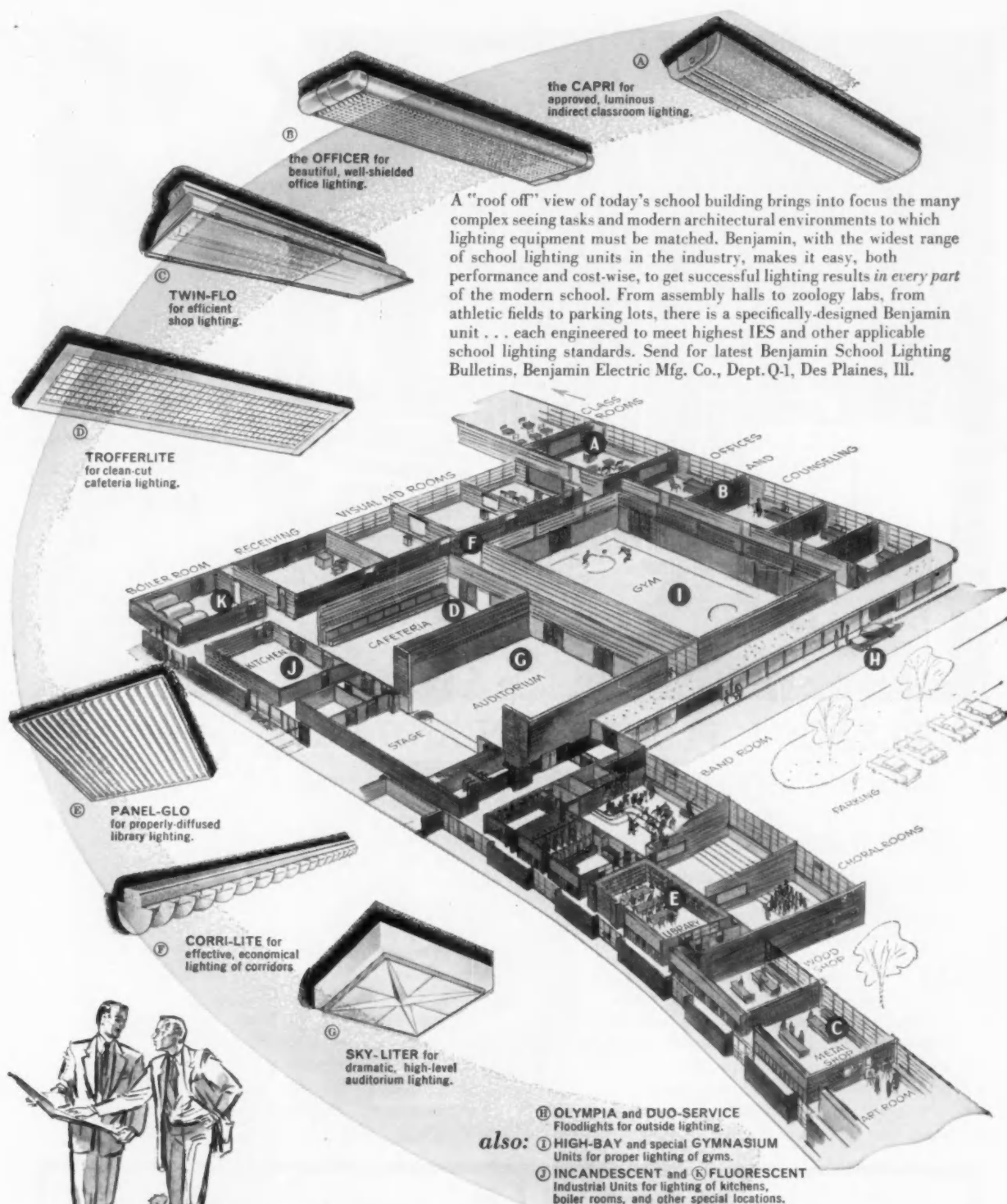


**PREFABRICATED INSULATED PIPING SYSTEMS**

**BARBERTON, OHIO**

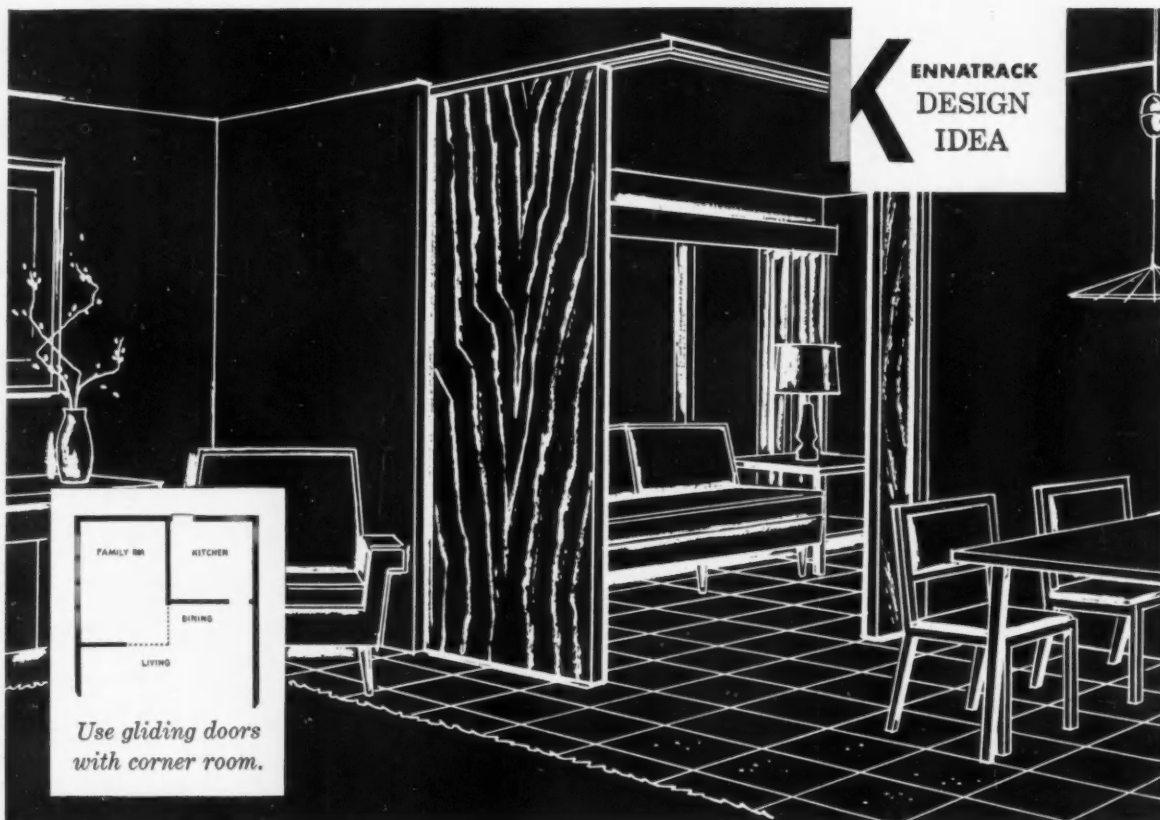
**IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED**





**BENJAMIN**  
*...always the source of good lighting*

Now Setting the Pace in **COMMERCIAL LIGHTING**



## FLEXIBLE FLOOR PLAN AND EXTRA SPACE

with gliding door hardware by Kennatrack

*Kennaframe pocket door installations provide added useful living area*

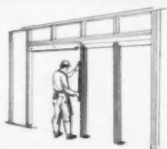
Here's a new space-making design idea that helps provide the flexibility needed in today's homes. Gliding doors close off this corner room for privacy, and—at the touch of a finger—glide quietly into the wall on Kennatrack hardware, giving the living room a brand new dimension of roominess.

This gliding door installation provides valuable extra floor space near the door opening for furniture

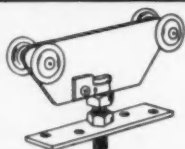
placement, or other family living requirements.

Gliding doors can be used in a variety of ways—for wardrobes, stair well closets, or as room-dividers—to save premium space all over the home. Space-making ideas are continually being developed by a full-time staff of designers and engineers at Kennatrack, the world's largest exclusive manufacturer of hardware for gliding and folding doors.

For quiet, free-moving hardware, always specify Kennatrack Gliding Door Hardware—the complete line that is guaranteed to give trouble-free performance for a housetime. For complete information see Sweet's catalog (18d/Ke), or write for free Kennatrack catalog of gliding and folding door hardware.



**KENNAFRAME.** Original, patented all-steel frame with aluminum track, for fast, easy pocket door installations.



**KENNATRACK** is sound-conditioned; only Kennatrack offers hangers with eight floating nylon wheels.

*For quiet and for quality*

# **KENNATRACK®**

SOUND-CONDITIONED GLIDING DOOR HARDWARE

Kennatrack Corporation, Elkhart, Indiana  
A subsidiary of Ekco Products Company

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**J&L ANNOUNCES**

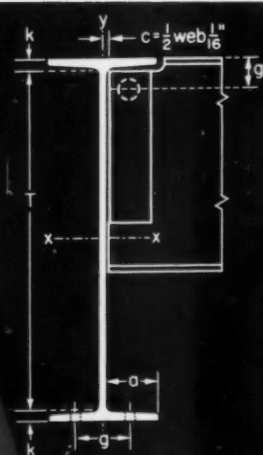
# NEW 14" LIGHT BEAM

## with 4" flange

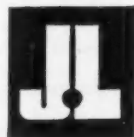
Jones & Laughlin is now producing a 14", 17.2 lb. light beam. The new light weight hot rolled section, with a 4" flange, was developed by J&L structural engineers to meet the need for an additional light weight section in the design of apartments, schools, hospitals, shopping centers, parking garages, industrial and commercial buildings.

The new 14" light beam can be furnished in regular carbon or high tensile grades. For properties and design data on this new section, we suggest you refer to the American Institute of Steel Construction Manual.

Consult your J&L district sales office concerning availability of this new light beam, or write direct to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pa.



Properties for Designing		Properties for Detailing	
Nominal size	14 x 4 in.	Nominal size	14 x 4 in.
Weight per foot	17.2 lb.	Weight per foot	17.2 lb.
Area	5.05 in. <sup>2</sup>	Depth	14 in.
Depth	14.0 in.	Flange—Width	4 in.
Flange—Width	4.0 in.	Mean thickness	1/4 in.
Mean thickness	.272 in.	Web—Thickness	3/16 in.
Web thickness	.210 in.	Half thickness	1/8 in.
Axis X-X—I	147.3 in. <sup>4</sup>	Distance—a	1 1/8 in.
S	21.0 in. <sup>3</sup>	T	12 1/8 in.
r	5.40 in.	k	9/16 in.
Axis Y-Y—I	2.65 in. <sup>4</sup>	g <sub>1</sub>	1 1/4 in.
S	1.32 in. <sup>3</sup>	c	3/16 in.
r	.72 in.	Max. flange rivet	3/4 in.
		Usual gage—g	2 1/4 in.



**Jones & Laughlin**  
**STEEL ... a great name in steel**

# You can make design changes simply...

and save hours of  
drafting time...  
with Ozalid's family of  
intermediate materials

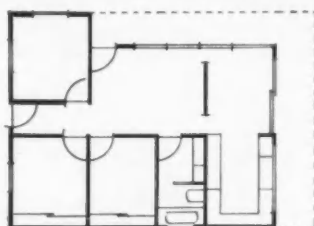
Once... just once... you run your original drawing through your Ozalid machine with a piece of Ozalid intermediate material. Then file away your drawing. Your Ozalid intermediate copy becomes a duplicate original—all set to give you important benefits.

Take design changes, for instance. With an Ozalid intermediate print, there's no need to trace or redraw the original design. Changes are as easy as 1-2-3... just see below!

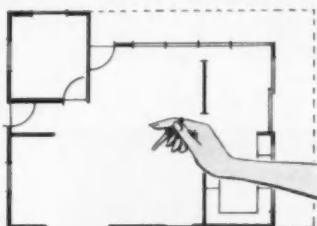
Not only are Ozalid intermediate prints exact copies of your original—they can be *better* than the original. Faded or weak areas are intensified.

There's an Ozalid intermediate material for every drafting room need: film, translucent paper, and cloth.

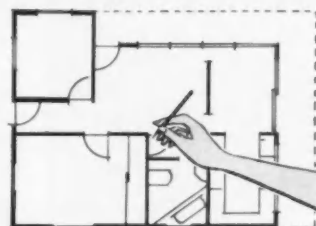
See for yourself how quick and easy you can make design changes with Ozalid intermediates. Contact your local Ozalid man—his name is in the phone book—or write for free folder. Write to Ozalid, Dept. CC-12, Johnson City, N. Y. In Canada: Hughes Owens Co., Ltd., Montreal.



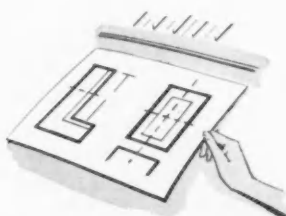
1. This is an Ozalid intermediate (translucent) print of the original drawing.



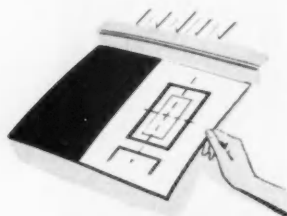
2. Draftsman eradicates obsolete lines with Ozalid Corrector Fluid.



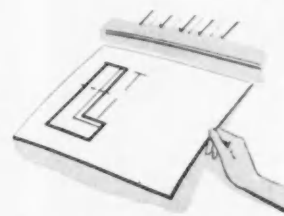
3. New design is drawn in. Prints can now be run from this intermediate "master."



1. Expose original drawing in the usual manner on Ozalid intermediate paper, cloth, or foil. But do not develop!



2. Cover all printed yellow lines which are to be retained on the intermediate with a mask of black opaque paper—re-expose in Ozalid machine. The light will remove all obsolete details left uncovered.



3. Develop the intermediate...and you have a clear, up-to-date "framework" to which you add the new design. Use this intermediate master to produce prints.

## OZALID®

Products for Design

A Division of General Aniline & Film Corporation  
In Canada: Hughes Owens Company, Ltd., Montreal



"The new library has large interior areas with low ceilings," reports architect Paul D. McCurry (Schmidt, Garden & Erikson, Chicago). "The Sylvania lighting system produces good, all-encompassing light—100 foot candles—yet gives us subtle, unobtrusive illumination for which we are striving."

## Sylvan-Aire Wall-to-Wall Lighting System

"supplies the best reading light possible"  
in this new library and lounge

... at University of Pittsburgh



Exterior view of new Maurice and Laura Falk Library, University of Pittsburgh.

Meeting all requirements of modern library lighting, giving a soft *diffused* effect, permitting reading in any area, and eliminating shadows, Sylvan-Aire Wall-to-Wall lighting system by Sylvania provides quality illumination needed at the new Maurice and Laura Falk Library, University of Pittsburgh.

The new building is an interior library with no windows. Because of this, the entire burden of illumination rests directly with the Sylvan-Aire lighting system. It is reported to create none of the reading hazards which normally are encountered with glossy papered books. Sylvan-Aire has also eliminated all need for small desk lamps in the library.

Electrical Engineer Lloyd Van Dermark of Schmidt, Garden & Erikson,

Chicago, states: "We are highly pleased with the workmanship of the Sylvania ceiling at the University of Pittsburgh. They adapted their design to fit special conditions and their technique of fitting the ceiling to the building contours was perfect in every detail."

—*Sylvan-Aire, by Sylvania, can introduce this same combination of good uniform lighting and clean-cut appearance, giving emphasis to the idea of "spaciousness," in your modern reading rooms, lounges, offices and classrooms. Contact the Sylvania Fixture Specialist in your area. Or write direct to lighting headquarters:*

SYLVANIA ELECTRIC PRODUCTS INC.  
Dept. M11, Lighting Division—Fixtures  
One 48th Street, Wheeling, W. Va.



In the student lounge. "We regard this installation as one of the finest of its kind," reports J. D. Brown, District Manager, of Patterson, Emerson, Comstock, electrical contractors working in conjunction with Howard P. Foley Company.



# SYLVANIA

... fastest growing name in sight

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Armstrong Custom Minaboard is a strong, rigid lay-in unit for installation in exposed grid systems.

## New Armstrong Custom Minaboard

**N**OW you can specify an acoustical ceiling board for exposed grid systems that not only offers all the benefits of this type of board, *but stays clean!*

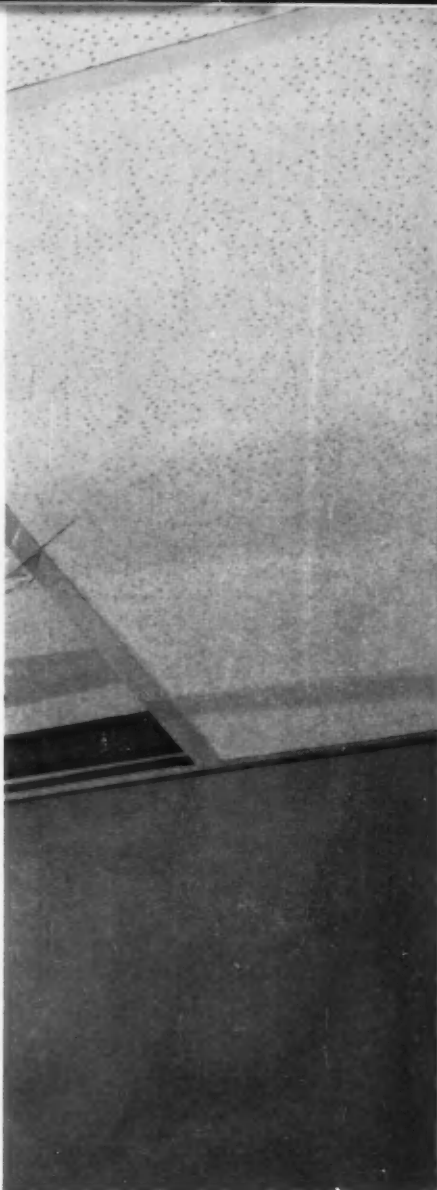
"Breathing," a frequent problem with lower density boards of this type, has been eliminated in new Armstrong Custom Minaboard. Unlike lighter materials that do not resist air infiltration, Armstrong Custom Minaboard retards the movement of air through the board. This minimizes maintenance problems by preventing build-up of dust and dirt on the surface of the board.

The density and mineral-fiber composition of Armstrong Custom Minaboard also provide an excellent sound transmission resistance factor (26 db at 4,000 frequency). This is extremely important in construction utilizing ceiling-height movable partitions.

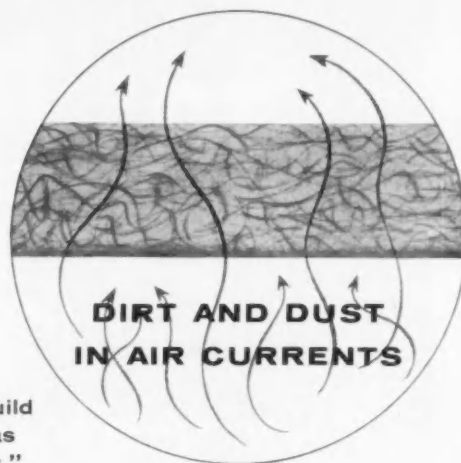
Completely fire-safe, Armstrong Custom Minaboard will not support combustion. It has a Class A rating under federal specifications.

Your Armstrong Acoustical Contractor can give you comprehensive data and specifications on this newest addition to the extensive line of Armstrong





## LOW-DENSITY MATERIAL



## CUSTOM MINABOARD



**eliminates "breathing," stays clean**

Acoustical Materials. For a free booklet on Custom Minaboard, write to Armstrong Cork Company, 4212 Rock Street, Lancaster, Pennsylvania.

**Size:** 23-3/4" x 47-3/4"

**Thickness:** 5/8" (Nominal)

**Noise-Reduction Coefficient Specification Range:** .70-.80

**Light-Reflection Coefficient:** "a" (.81)

**Armstrong**

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Minatone® • Corkoustic® • Crestone®

Custom Minaboard\*

\*TRADE-MARK

**10** Overly  
**stainless products**  
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 newest  
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The Beacon Building in Columbus, Ohio, is the new home office for the Beacon Mutual Indemnity Company. It is the city's first new office building in over 20 years to offer public rental space. • Overly crafted stainless steel into 10 different forms for this new structure: marquee fascia, louvers, pylons, coping, window frames, flush hollow metal doors, door frames, sidelights, borrowed lights, and entrances. • Stainless steel was selected for beauty; it combines well with the exterior of Indiana limestone and red polished granite. Stainless was also chosen for its ability to stay new-looking for the life of the building, without maintenance. • Place your next stainless steel job in Overly hands — pioneers in fabrication of architectural stainless steel. Write today for our new catalogs. Address Dept. A-12.

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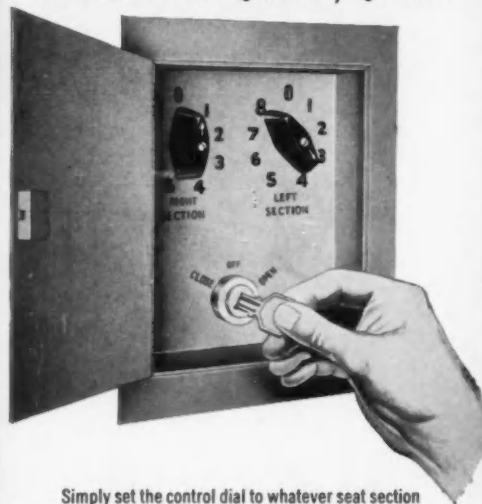


**Architects for the Beacon  
 Mutual Indemnity Company's  
 new home office building:  
 Benham, Richards & Armstrong,  
 Columbus, Ohio**

# *New* MEDART AUTOMATIC POWER-OPERATED GYM SEATS

*eliminate all effort necessary for manual opening and closing. Cost is low*

## EXCLUSIVE KEY-OPERATED CONTROL OPENS AND CLOSES GYM SEAT SECTIONS QUICKLY, QUIETLY



Simply set the control dial to whatever seat section is to be opened or closed and turn the key in proper direction—that's all! No matter how big each section—no matter how many rows—whether on main floor or balcony—seats move smoothly and noiselessly into position in only a few seconds without binding. If all the seats in any section are not required for use, releasing the key stops movement instantly when the wanted number of rows are in position.

Automatic safety controls insure completely hazard-free operation. Removable keys prevent operation by all unauthorized persons. Medart Key-Operated Control may be installed any place in the gym for greatest convenience and utility.

**Power operation completely self-contained within gym seat sections. Key-operated remote control may be installed anywhere**

Patents Pending

- No floor tracks or building changes are necessary. The installation of power operation requires no other conditions than are needed for manually-operated seats.
- No complicated wiring is needed. Any ordinary 110-volt or 220-volt power source will do.
- Seats roll open or closed without binding or "crabbing". Straight-line trackage is an outstanding feature of Medart power-operated seats.
- Seats automatically lock in any position during opening or closing by release of control key. Whether 1, a few, or all the rows are required, seats remain safely stationary until power control is key-actuated.
- Smooth key-controlled power operation eliminates all crashing and banging of manually-operated seat sections by overly enthusiastic muscle men. Life of seats is prolonged—maintenance and upkeep are reduced to a minimum.

**Write For Information**

**FRED MEDART PRODUCTS, INCORPORATED**  
3540 De Kalb Street • St. Louis 18, Missouri



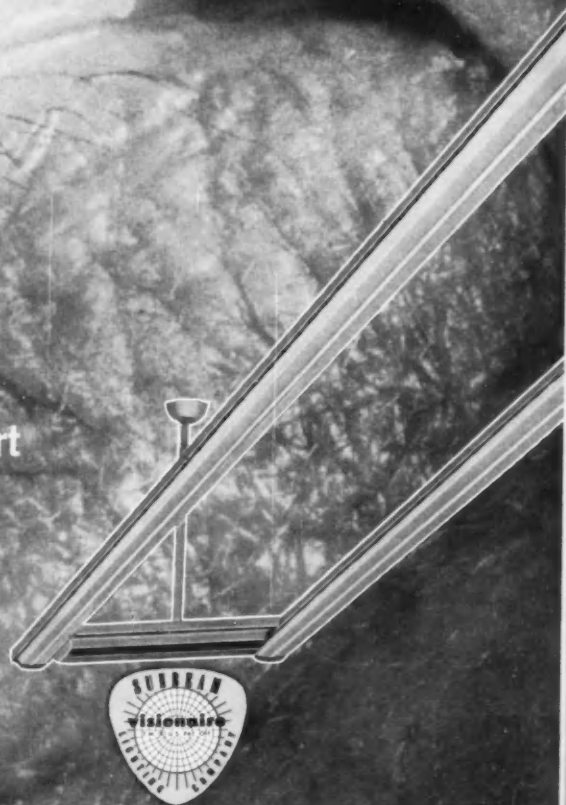


*Sightline*

Patents Pending

TAKES THE SQUINT OUT OF SEEING!

If You've An Eye For The Utmost In Illumination Comfort  
An Eye For Perfect Ceiling And Fixture Blending  
You'll Like "SIGHTLINE!"







A true milestone in comfortable seeing, Sunbeam Lighting's new SIGHTLINE is a suspended indirect lighting system that creates a velvet-soft visual environment in which seeing becomes a pleasure, not a chore. SIGHTLINE'S engineered uniform low brightness ratios assures 'no over-head-feeling.' SIGHTLINE illumination keeps the eye on the task not the luminaire.

Excels in any environment where critical viewing conditions exist: schools, drafting rooms, offices, etc. SIGHTLINE exceeds most ASA standards and accommodates higher lumen lamps for greater intensities of comfortable illumination.

Ballast housed cross-channels are 8' apart, another contributing factor in SIGHTLINE'S clean and modern linear appearance. Patented spring loaded bottom swivel enables SIGHTLINE to hang with anchored levelness and appealing architectural poise. Normal maintenance can be achieved without removing plastic panels. All metal parts are Bonderized against corrosion and finished in all white baked enamel. Write for bulletin #773 for more details on how to take the squint out of seeing.

## SUNBEAM LIGHTING COMPANY

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3840 Georgia Street, Gary, Indiana

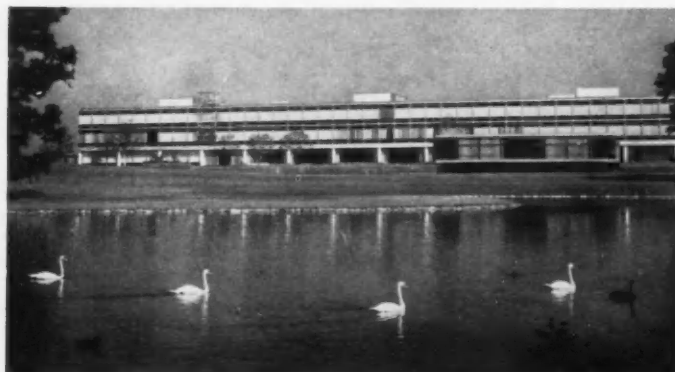


## CONNECTICUT GENERAL LIFE INSURANCE COMPANY

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The buildings are equipped throughout with ADT-supervised sprinkler systems which summon fire-fighting forces *automatically* when water flows. Watchmen report to the ADT Central Station while on patrol, and there is a complete ADT Manual Fire Alarm System, including local warning devices. ADT Automatic Fire Detection Systems supplement this protection in certain areas. In addition, the company's vaults are guarded by the ADT Phonetalarm which automatically summons police in case of an attack.

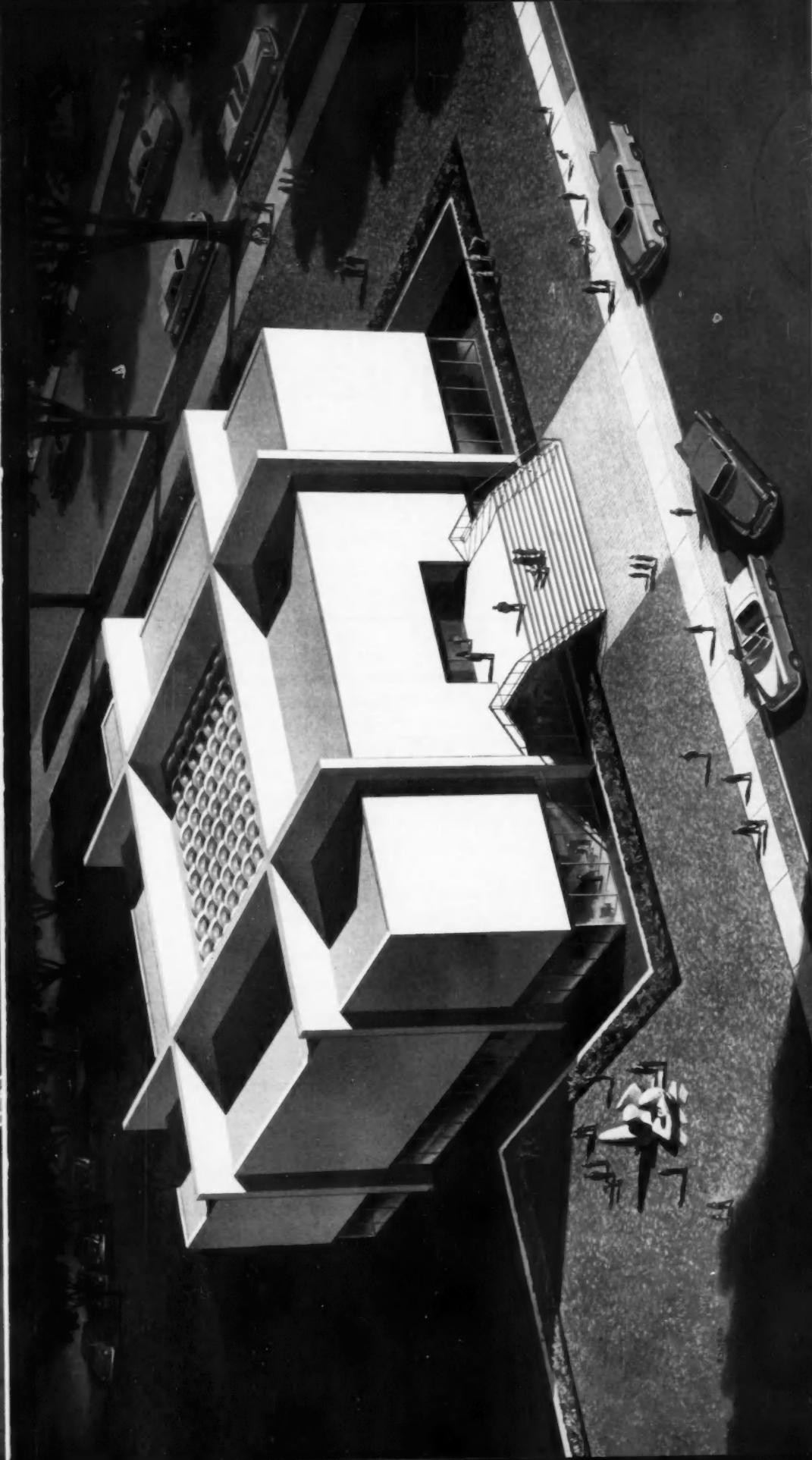
Whether your project is large or small, there is an ADT *Automatic* Protection Service to meet your requirements and to give better protection for property, profits and employees' jobs, *at lower cost*.

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Design for Munson-Williams-Proctor Institute, Utica, N. Y.

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*PHILIP JOHNSON, Architect*

- One of a series of advertisements being presented in national magazines by Universal Atlas — to promote interest in architectural contributions for a greater America through the medium of concrete.

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**BANK OF THE SOUTHWEST**, Houston, Texas, is city's tallest welded structure. It uses 6.2 miles of porcelain-enameled aluminum in the 7-inch vertical trim on its mullion panels.

## Now...a ceramic that gives you

Consider these advantages of  
designing with vitreous-enameled aluminum

- Durable beauty
- Freedom from rust
- Excellent resistance to corrosive influences  
(salt water, mild acids, etc.)
- Unlimited range of colors and surface textures

**PLUS ALL THE ADVANTAGES OF DESIGNING  
WITH ALUMINUM:**

- Economical fabrication (low-cost dies)
- Complete range of sizes and shapes
- Less dead weight
- High strength

**DU PONT  
PORCELAIN ENAMELS**

*for aluminum*



REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY



# finish for aluminum new design opportunities

**Du Pont vitreous enamel—a low-temperature frit  
—brings lasting colors to aluminum curtain walls, spandrels,  
door trim . . . any aluminum structural member**

## PROBLEM

Aluminum has always been a favorite construction material because of its light weight, corrosion resistance and high strength. It can be extruded in almost any size or shape from inexpensive dies and is easy to fabricate. But obtaining a *durable* color on aluminum for architectural use was a problem until comparatively recently.

## SOLUTION

Du Pont developed an enamel specially designed for aluminum. It is a low-temperature frit and fuses well below aluminum's melting point. This enamel forms an enduring bond with aluminum . . . so much so that a section of enameled aluminum can be sheared, sawed or punched without chipping the enamel!

Du Pont vitreous enamel is almost totally unaffected by the elements. It is lightfast . . . resists mild acids, salt water and corrosive influences of all types. This enamel is the *ultimate in durable color for aluminum* and is available in an unlimited range

of colors and surface textures.

## RESULTS

Vitreous-enameled curtain walls, spandrels and trim have proven successful on many of today's most modern buildings. Architects report enameled aluminum structural members add beauty and character to their designs . . . while substantially reducing dead weight. All-aluminum building exteriors in lasting colors are now possible—at considerable savings in fabrication and construction.

Du Pont technical representatives will be glad to help you in applying vitreous-enameled aluminum to your design. Expert advice on every phase—from initial design and color selection to finished production—is available at no obligation. Du Pont can also recommend experienced enamelers who will be glad to work with you.

**JUST SEND IN COUPON BELOW** for complete information about Du Pont Porcelain Enamel for Aluminum—its properties and applications.

**ELECTROCHEMICALS DEPARTMENT**  
Ceramic Products Division

**E. I. DU PONT DE NEMOURS & CO. (INC.)**  
Wilmington 98, Delaware

E. I. du Pont de Nemours & Co. (Inc.)

Electrochemicals Dept., AR-12, Wilmington 98, Delaware

☐ Please send me an advance copy of your 1958 Sweet's catalog insert.

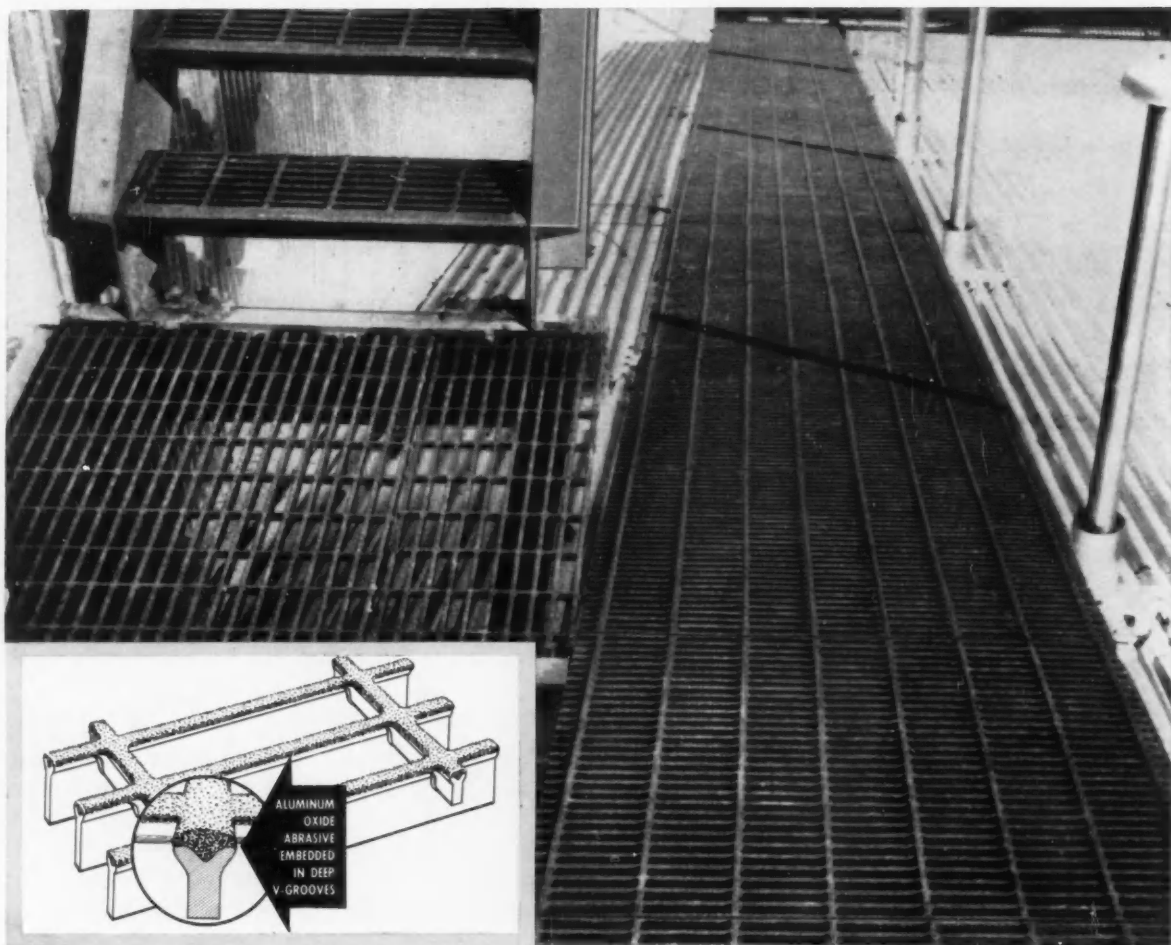
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White & Hermann, Architects

Photo: Phil Fein

**CALIFORNIA  
REDWOOD**

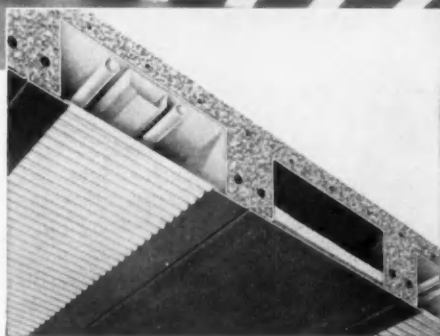
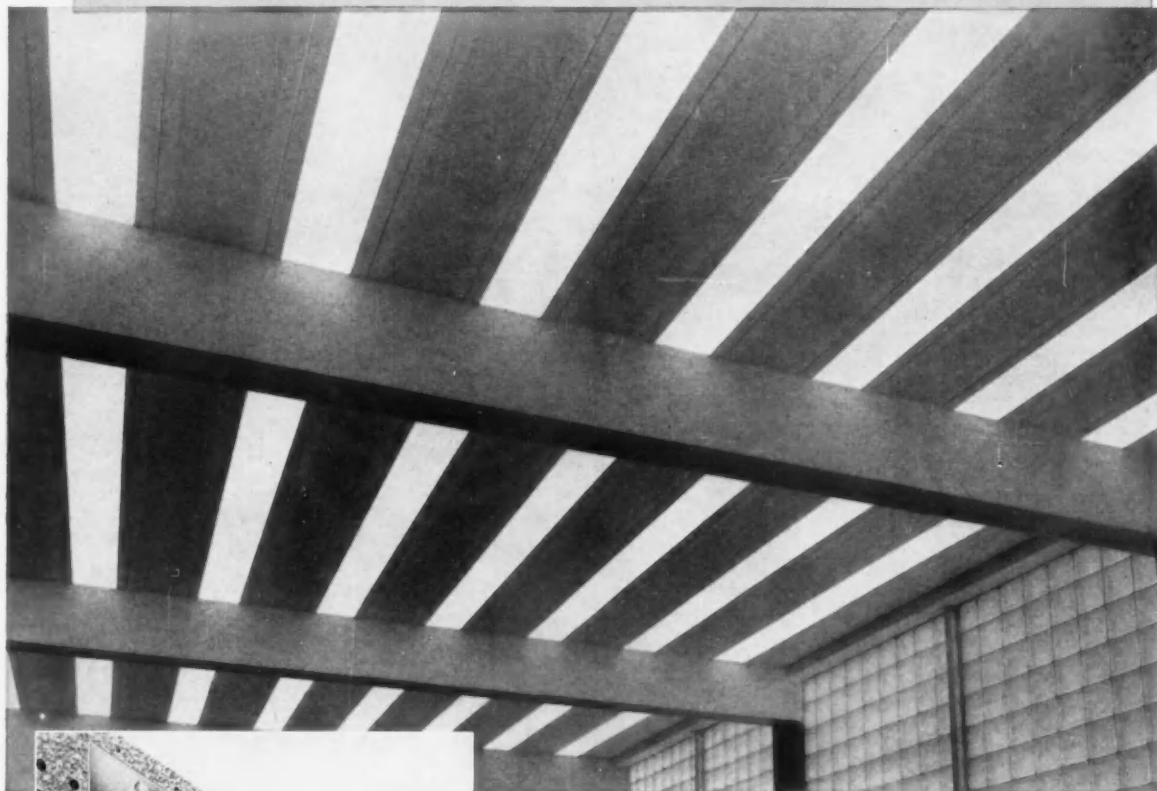


**Freedom of design** is assured with versatile, easy-to-work

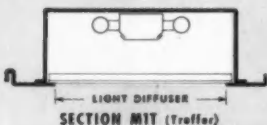
California redwood. Interior designer and architect alike find an endless variety of patterns and textures in redwood architectural woodwork. And they specify "CRA-Certified Dry" grades for dependable quality.



# ACOUSTICAL and TROFFER FORMS



**MAHON**  
ACOUSTICAL and TROFFER FORMS



Above is the Ceiling of the Auditorium in the Eugenia Mettetal School, Detroit, Michigan. It is one of 50 rooms with Mahon Acoustical-Troffer Ceilings. Shreve, Walker & Associates, Inc. Architects. Alfred A. Smith, Inc., Gen. Contractors.

## ... for Acoustical Ceilings with Recessed Lighting!

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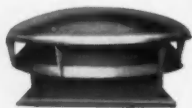
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## NEW "I-LINE" for EYE APPEAL

The new "I-Line" provides an attractive low contour, assuring maximum capacity or efficiency with the minimum over-all height.



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By moving a large volume of air at high velocity, this Vertical Discharge fan keeps fumes from sifting back into building.



# Allen

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## WIND-DRIVEN TURBINES

Three types of Allen turbines take full advantage of the economy of natural air movement.



## EXHAUST FANS

Remote drive Staxauster is designed to handle corrosive fumes, and/or high temperature air.



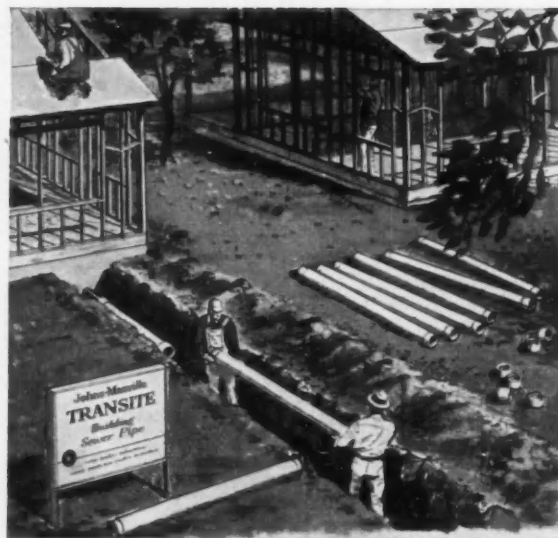
## THE ALLEN LINE

Write today for catalog that gives specifications and performance data on these and other units in the Allen ventilator line.



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Roof Ventilators for Every Commercial and Industrial Need  
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Long lengths and the quickly assembled Ring-Tite Coupling save time to keep your final costs low!

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**LOWERS COST OF SHOWER CONSTRUCTION**

The new FIAT *Monterey* shower floor has a PreCast integral threshold and curb that completely eliminates the most expensive steps in shower construction: the built-on-the-job floor, threshold and pilasters. Glass filler panels at the jambs replace the pilasters, rest directly upon the curb of the *Monterey*. The FIAT PreCast Shower Floor simply slides into place—there's no need for sub-pan, mortar, tiling and hours of costly labor. Try this new shower technique that saves you money and produces added sales appeal.

The *Monterey* shower floor, PreCast of sparkling terrazzo, is permanently leakproof and furnished as a complete unit with solid brass drain and stainless steel strainer plate. There is nothing else to buy—nothing else to install! The photograph shows an excellent and economical shower combining the *Monterey* floor with a glass filler panel and door forming the front. Either hinged or sliding doors, by others, may be used as the solid threshold provides a convenient foundation for the track.

*Monterey* model available in six sizes—rectangular, square and corner designs.

It's so much easier to see the advantages of PreCast Floors than to read about them. That's why we would like just five minutes of your time to show you this cross section sample. Clip coupon to your letterhead and get full information. No obligation of course.



DEPT. T  
 FIAT METAL MANUFACTURING CO.  
 9323 Belmont Avenue, Franklin Park, Ill.

Please send complete information on your complete line of shower equipment.

Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_  
 Type of Business \_\_\_\_\_



**FIAT METAL MANUFACTURING CO.**  
 Since 1922...First in Showers / Packaged Showers • Doors • Floors  
 / Toilet Room Partitions

FOUR COMPLETE PLANTS: Long Island City 1, N. Y.; Franklin Park, Ill.; Los Angeles 83, Calif.; Orillia, Ontario, Canada



**Owners:** Boston Manufacturers Mutual Insurance Company  
and Mutual Boiler and Machinery Insurance Company  
Waltham, Massachusetts

**Architects:** Anderson, Beckwith & Haible.

**Mechanical Engineers:** Delbrook Ventilating Co.

**Mechanical Contractor:** C. H. Cronin Co., all of Boston, Mass.

Air view shows central court.



Above: Reception Lobby.



Above: Cafeteria and Lounge.



Right: Court, Penthouse and Lounge.



# Award Winning Office Building also won Thermal Comfort with

## POWERS

Quality System of

## AIR CONDITIONING CONTROL

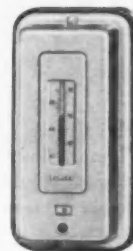
**This Winner of Significant Architectural Awards** is one of the nation's outstanding suburban office buildings. It was a 1957 recipient of the highest building design award of the American Institute of Architects. It also received the Boston Arts Festival Architecture Award and the 1957 Parker Medal for "the most beautiful building in Metropolitan Boston". In addition to "achieving such splendid use of its site and such useful splendor in its central court the building provides an attractive, pleasing environment, comfortable and highly efficient to work in."

**Big Dividends from ideal year 'round comfort** are assured here by Powers accurate control of temperature and humidity. It helps workers accomplish more with fewer costly errors, reduces absenteeism, helps hold good workers and attract desirable new employees.

**Nine multizone air conditioning units** provide heating, ventilating and air conditioning for the office areas. IBM room and cafeteria are served by a special unit. All are Powers controlled including the 250 ton refrigeration compressor which provides chilled water for the air conditioning units. See photo below.

Direct radiation, to offset wall losses during the heating cycle, is divided into 7 zones, each served with compensated hot water. FLOWRITE 3-way valves, controlled by Powers instruments mounted on central panel boards, regulate the temperature of hot water for each zone.

**Are You Planning A New Building** or modernizing an old one? If so, ask your architect or engineer to include a Powers Quality system of temperature and humidity control. They have been time-proven dependable and economical in thousands of prominent buildings since 1891.



*Symbol of Economy and Quality Control*

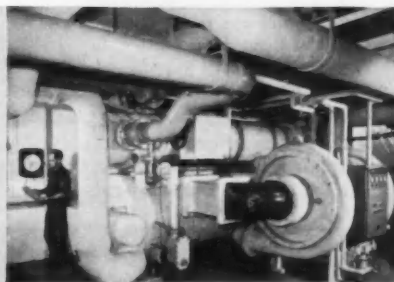
Once set, a Powers pneumatic thermostat, holds temperature constant day after day. It needs no frequent checking or readjustment.



Powers FLOWRITE 3-way Control Valve.

Left: One of two central panels with Powers Series 100 Temperature Indicating Sub-Master Controllers. Pneumatic selector switches provide manual operation when required.

Right: Chilled water supply for air conditioning units is regulated by a Powers Temperature Recording Controller.



*For further information contact our nearest office*

**THE POWERS REGULATOR COMPANY**

SKOKIE, ILLINOIS

Offices in Chief Cities in U.S.A., Canada and Mexico

65 YEARS OF AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL



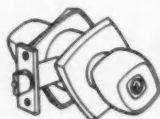
(c65)

# CLASSIC BEAUTY for modern doors

From classic to contemporary . . . Corbin Heavy Duty Cylindrical Lockset designs add a new dimension to modern door styling . . . make striking new door effects possible for your finer residences, schools, commercial and industrial buildings.



## CORBIN heavy duty cylindrical locksets



Precision operation makes this Corbin lockset line the finest of its kind. Compact,

heavy-duty construction assures smooth, flawless service over the years. And there's famous Corbin security: each lock features a full  $\frac{3}{8}$  inch throw for extra-secure locking, even if doors shrink or warp. See your Corbin dealer for full details.

### Other Outstanding Features:

- 27 functions covering all standard requirements
- 100% reversibility
- Most flexible master-keying system available
- Varied and extremely durable finishes
- Automatic deadlocking feature
- Approved by Underwriters' Laboratories for B, C, D and E label doors
- Meets Federal Specification Type 161



New VEGAS Design No. 813

**P&F CORBIN Division**  
The American Hardware Corporation  
New Britain, Connecticut



CRESTWOOD Design  
No. 805 with 8" rose



WINDSOR Design (Colonial)  
No. 803 with 8" rose



CHALICE Design  
No. 809



MELODY Design  
No. 811

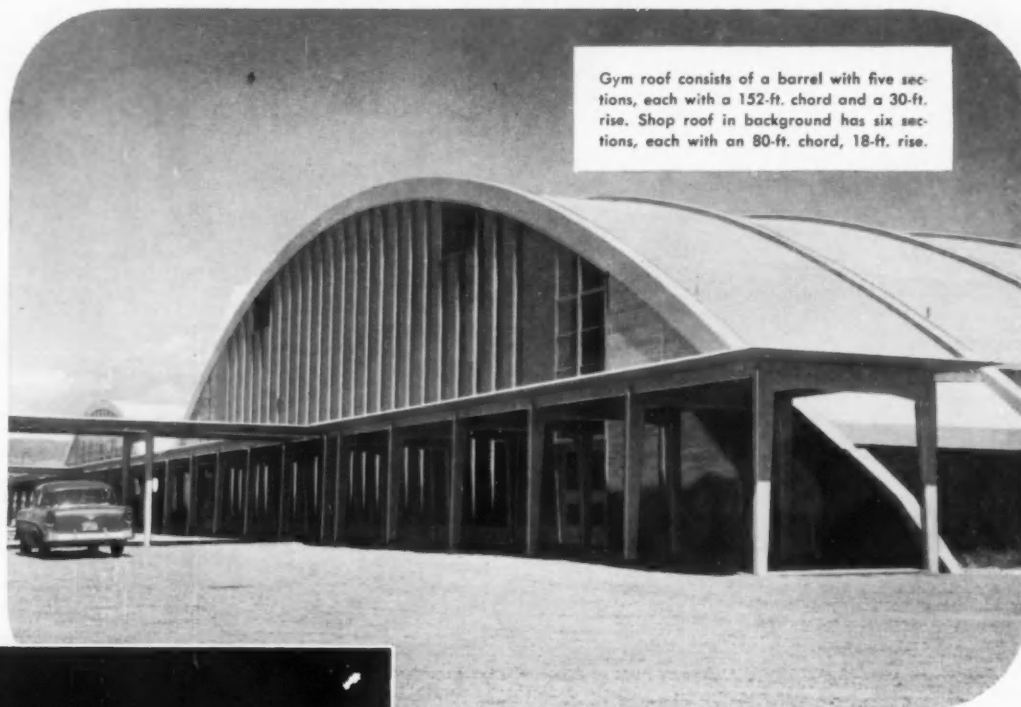


HARMONY Design  
No. 836



SPARTAN Design  
No. 830

All designs available in brass, bronze, and aluminum; except Windsor design, brass metal only. (Spartan also available in Stainless Steel.)



Gym roof consists of a barrel with five sections, each with a 152-ft. chord and a 30-ft. rise. Shop roof in background has six sections, each with an 80-ft. chord, 18-ft. rise.



The roof of the multi-purpose building, above, consists of seven 60-ft.-long barrels, each with a 32-ft. chord and 23-ft. radius. Photo below shows the type of covered walks (pre-cast concrete bents) used on the campus. The architect was Maloney & Whitney, Yakima, Wash. The structural engineer was Worthington & Skilling, Seattle. The contractor was Wall, Bartram & Sanford, Wood Village, Troutdale, Oregon.



## CONCRETE SHELL ROOFS answer school's need for unobstructed floor areas

The Ellensburg High School, Ellensburg, Wash., demonstrates the versatility of concrete shell roofs for educational structures. Large unobstructed floor areas were required for three types of buildings: the gymnasium, the shop building and a multi-purpose building. Concrete barrel shell roofs were chosen for all three.

Shell roof construction provided the unobstructed floor area required. It was economical to build and opened unusual design opportunities to the architects.

More and more architects and engineers are turning to concrete shell roofs for structures requiring open floor areas. Roofs with spans up to 300 feet and more can be built without any interior columns. In addition to school buildings such as shown here, concrete shell roofs are ideal for auditoriums, exhibition pavilions, hangars, field houses, train sheds, repair shops for large equipment, garages and warehouses.

Concrete shell roofs offer additional advantages of low maintenance cost, long life, low insurance rates and **low-annual-cost** service. Send for free illustrated booklets. Its distribution limited to the U.S. and Canada.

### PORTLAND CEMENT ASSOCIATION

Dept. A12-8, 33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



## Flag-raising day at another great new Olin Aluminum plant

Cradled in the heart of the Ohio River Valley, this expansive industrial giant is about to spring to life.

Ultra-modern from the ground up, this huge new Olin Aluminum Sheet Mill within a few short months will add its production to the vigorous mainstream of quality Aluminum flowing to the nation from four Olin Aluminum plants.

Flag-raising day at this giant new mill will mark an important new chapter in the exciting 22-month growth of Olin Aluminum. New ore ships, rolling mills, extrusion plants and wire and cable mills are already in operation or under construction. With these modern, fully-integrated facilities, Olin Aluminum is right now on the way to an initial annual volume of 340 million pounds of quality Aluminum. And that is only the beginning.

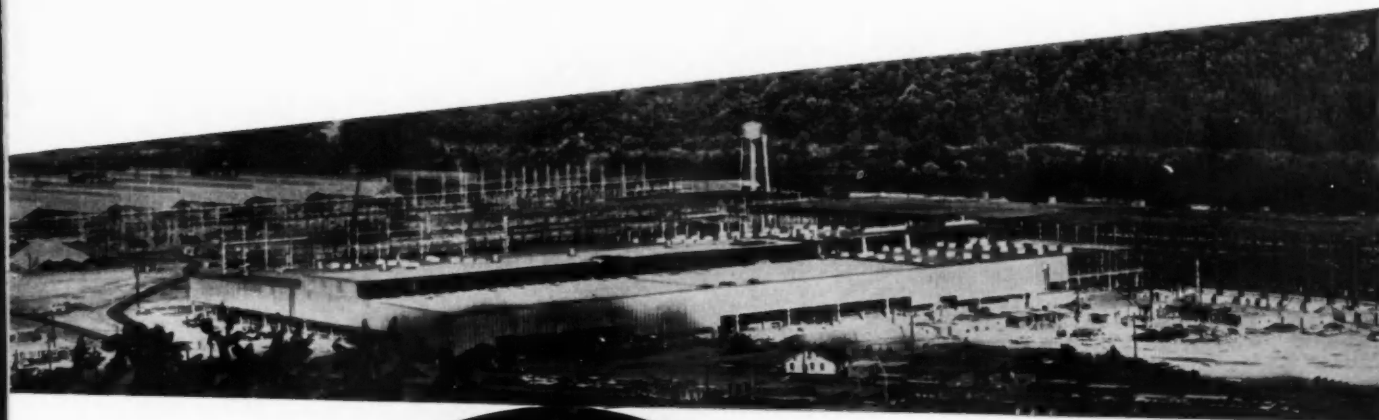
This new Aluminum will be custom-tailored to your specifications. And the unique standards of quality and service by which it will be produced and delivered to you will help you simplify your manufacturing procedures and achieve maximum efficient production from each pound you use.

If this is the kind of quality and service you have long been looking for, write now for product availabilities to our new permanent sales headquarters: Aluminum Division—Sales, Olin Mathieson Chemical Corporation, 400 Park Avenue, New York 22, New York.

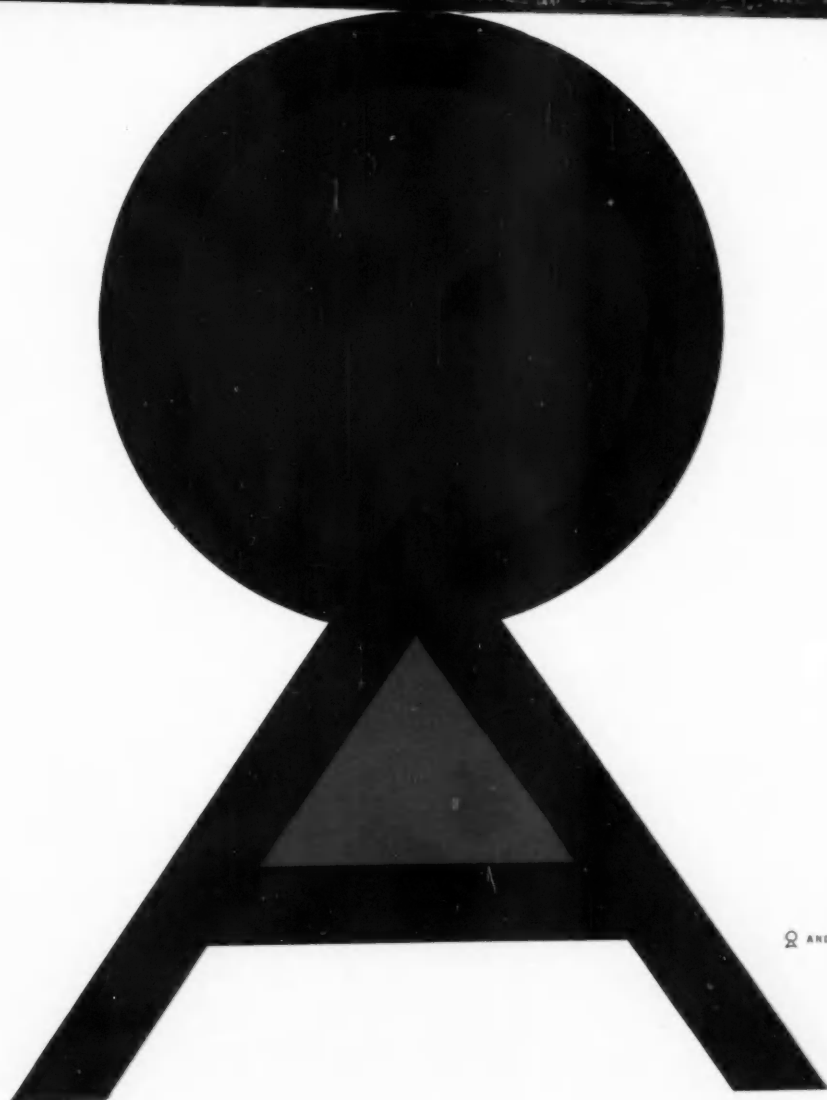
**OLIN**  
ALUMINUM

Symbol of new Standards of Quality and Service in the Aluminum Industry





*Ginsler*



Ω AND "OLIN ALUMINUM" ARE TRADEMARKS



\* Conference Room, Piedmont Hospital, Atlanta, Georgia

The right combination for beauty and efficiency. That's NEO-RAY LOUVRED CEILINGS. Why? Because only NEO-RAY gives you so many patented and exclusive features:

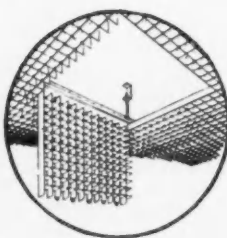
- ... perfect alignment is prefabricated
- ... stock sections that can be cut on the job to meet any requirements
- ... simple labor-saving design for low cost installation
- ... hinged sections provide easy cleaning and maintenance

And there's no limit to the interesting lighting combinations you can create with NEO-RAY LOUVRED CEILINGS.

**Architects:**  
SHUTZE, ARMISTEAD & SAGGUS  
ATLANTA, GA.  
**Consulting Engineers:**  
NEWCOMB & BOYD  
ATLANTA, GA.  
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BEERS CONSTRUCTION CO.  
ATLANTA, GA.  
**Electrical Contractor:**  
CLEVELAND ELECTRIC CO.  
ATLANTA, GA.

See our catalog in Sweet's Architectural File sec. 31a  
NE

**IN THE SOUTH**  
See Our Permanent Display At  
**ARCHITECTS & ENGINEERS INSTITUTE**  
230 Spring St., Atlanta, Ga.

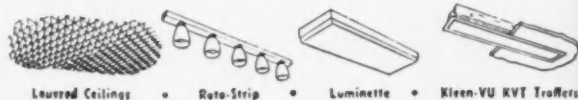


#### SPECIAL LOUVRE DESIGNS?

Neo-Ray is recognized as the pioneer in the development and manufacture of louvre ceilings ... with years of louvre ceiling experience. Let the "know-how" of our engineering department assist you. No obligation, of course.

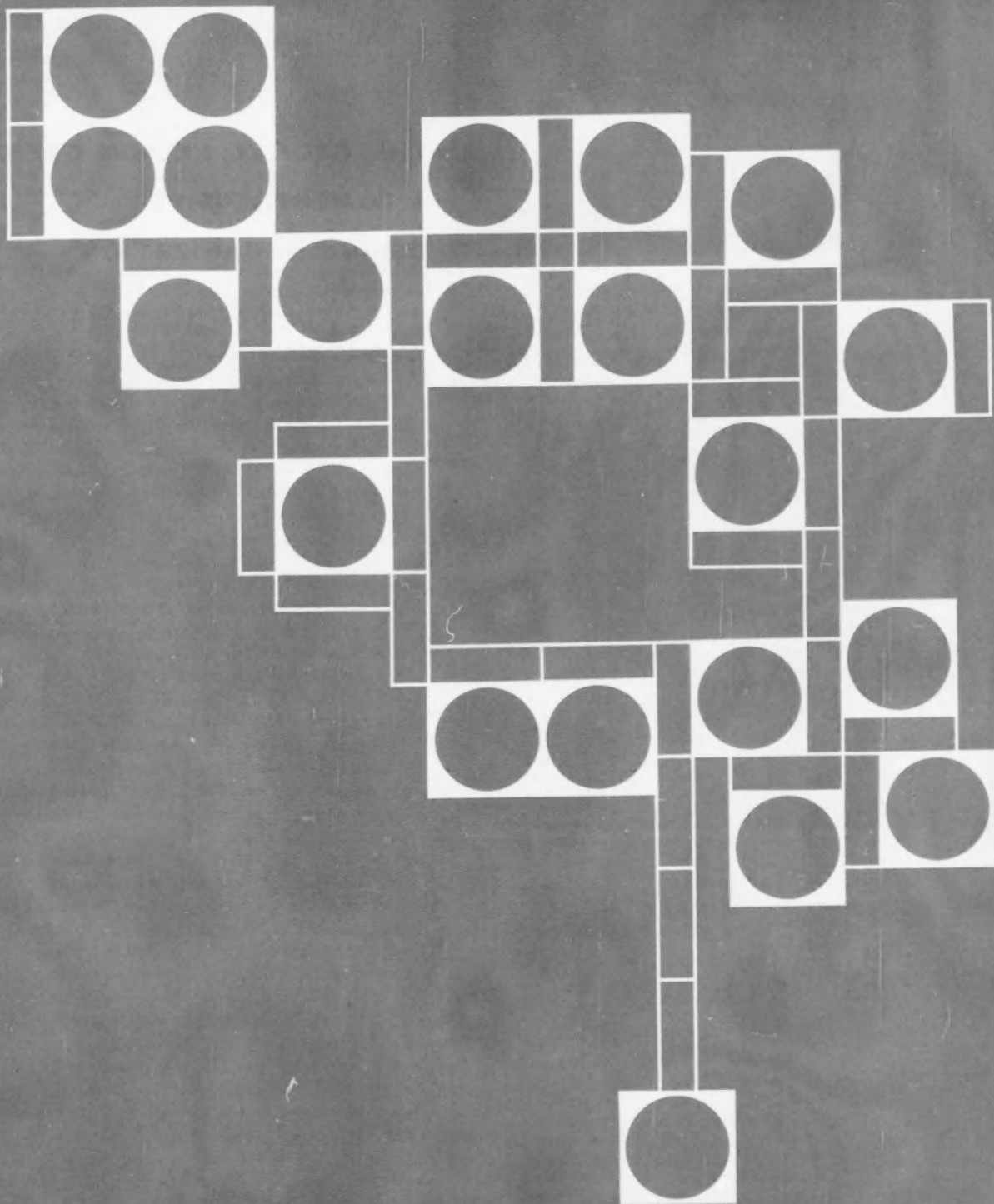
Send for **NEW LOUVRED CEILING** catalog No. 544

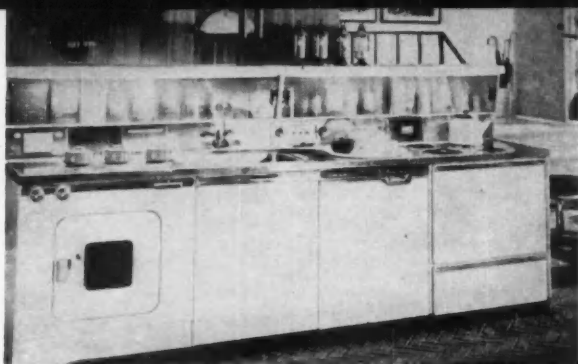
MANUFACTURERS OF LIGHTING FIXTURES INCLUDING



Louvered Ceilings • Roto-Strip • Luminette • Klean-VU RVT Troffers

**NEO-RAY PRODUCTS, Inc.**  
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*Above: kitchen center designed by General Electric as a result of consultation with the Nelson organization. Below: house for Otto L. Spaeth at Easthampton, L. I.*

© Erro Suller



*Above: prefab for the Pease Woodwork Co. designed from existing inventories of available materials and components for a market which is unknowing in design terms, nostalgic, emulative and concerned about resale values. Below: office interior for the Columbia Broadcasting System, Milwaukee, Wis.*

Hedrich-Blessing



## THE GEORGE NELSON OFFICE: A COMPREHENSIVE DESIGN ORGANIZATION

The George Nelson Company differs from most architectural or industrial design firms in the scope and variety of its projects, as well as in the manner in which these projects interrelate. This greatly diversified design operation manifests a unity imposed by architectural discipline. Two of the four principals are registered architects, the others are architecturally trained.

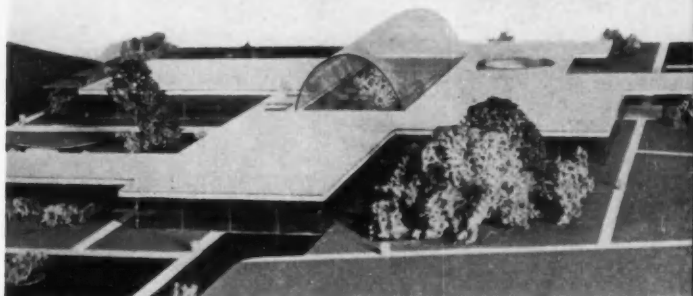
George Nelson, architect, design consultant, editor, and author, in association with senior staff members Irving Harper and John Pile, has established an office which has produced distinguished product, graphic and exhibition design. Architectural and interior design of the same high quality is done by the partnership of George Nelson and Gordon Chadwick.

The architecturally ordered versatility of the George Nelson office is of great value to its clients, any one of whom may benefit from some or much of the design done for other clients. There are many examples in the Nelson work of the intricate interrelations among the basic categories of product, graphic, architectural and interior design. A manufacturer producing furniture designed by the Nelson office uses an aluminum drawer pull the designers developed for a firm making aluminum extrusions. The owner of a custom built house by Nelson and Chadwick is one of the first to have a shelving system made from an extruded aluminum structural pole, connector, and bracket developed for the same firm. An exhibition in San Paolo, Brazil, and one in Williamsburg, Virginia, both completely designed by the Nelson graphics staff, demonstrate another adaptation of this pole and connector system. Clients who have commissioned from Nelson and Chadwick buildings or commercial and residential interiors benefit from other work of the architectural and product design staff as design consultants to the building industry. As a result of their work with manufacturers of glass, aluminum and other basic materials, as well as with the producers of such building components as windows, structural systems, furniture, partitions, lighting and air conditioning systems, and kitchen appliances, the designers are able to make actual use in their architectural commissions of the products they have helped develop.

The comprehensive design program of George Nelson has another important value to the client. It enables the design firm to provide an overall coordinated program of design where needed. A client may invite the firm to design its plant, products, showroom and exhibits, catalogs, displays and packaging. Thus a business can be given its own visual identity.



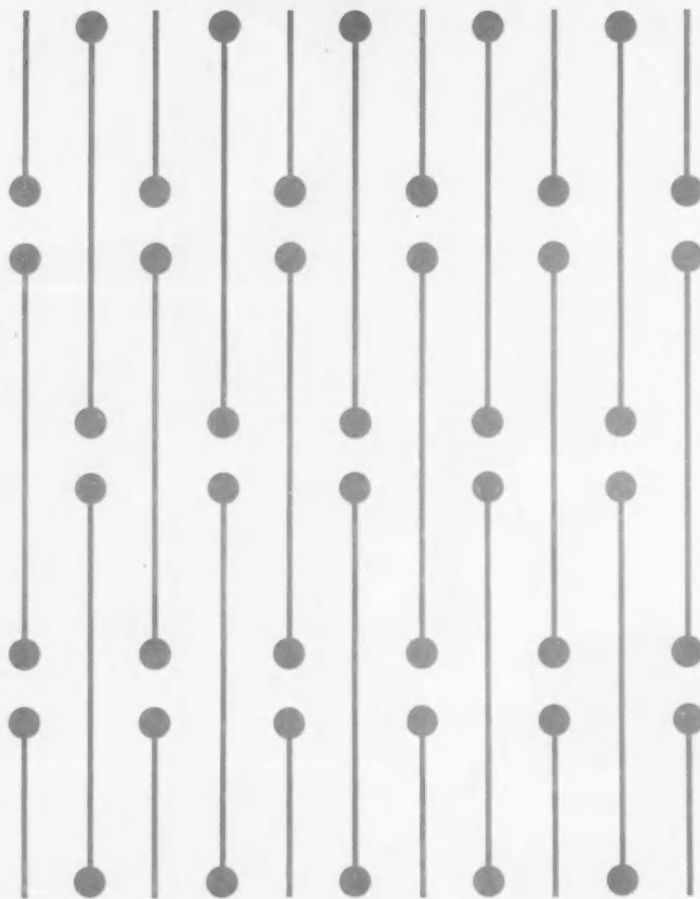
*Right: model of factory complex for the  
Ansul Chemical Company. Curved glass roof  
encloses court making it useable all year.  
Below: James T. Kirkpatrick residence in  
Kalamazoo, Michigan*



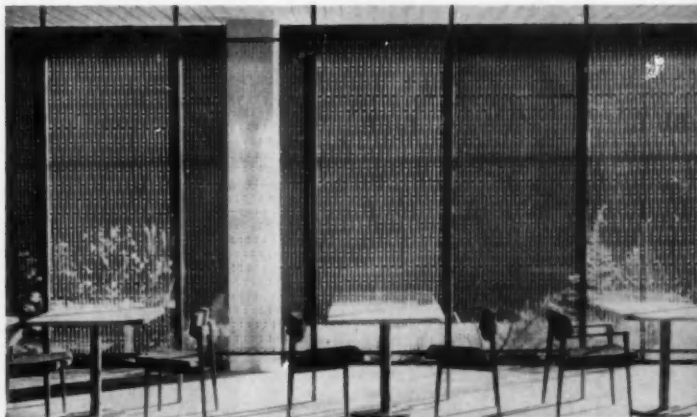
*Norman Carver*

# The New York Times

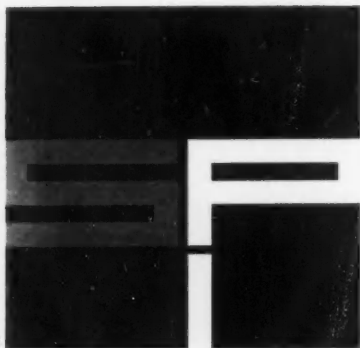




Left: information center for the New York Times. The façade, the light diffusing ceiling made of Venetian blind slats, and the graphic exhibits are all the work of the Nelson office. Most of the furniture shown is manufactured by the Herman Miller Company for which George Nelson is design consultant. Above: one of several different patterns designed to be printed on the plastic sheets which form the core of safety glass. These colored patterns modify light which is transmitted through them. This architectural application was developed for the Monsanto Chemical Company. Right: installation of the pattern at the University of Georgia. Like most of the Nelson interiors this was first studied as a 1-in. scale model of which this is a photograph



# COLONIAL Williamsburg



5

1. Don Ervin of the Nelson graphics staff developed a display alphabet based on the Bulmer type face which was cut in 1790. This alphabet is used in the Williamsburg Exhibition itself, and throughout the Williamsburg Restoration area for traffic, parking, identification and other signs. 2. Williamsburg Exhibition system based upon the round 'Omni-pole' designed for Aluminum Extrusions Inc. 3. Exhibition in San Paolo, Brazil, also constructed on the round 'Omni-pole' system. 4. A shelf and bracket device designed for Structural Products Incorporated using a square post based on the same principle. All structural members shown in photographs are aluminum extrusions drawn in full scale on opposite page. 5. A symbol created for Structural Products Inc. to be used on letterheads, promotional material, labels and other ways to help establish corporate identity

1

Robert C. Louman



2



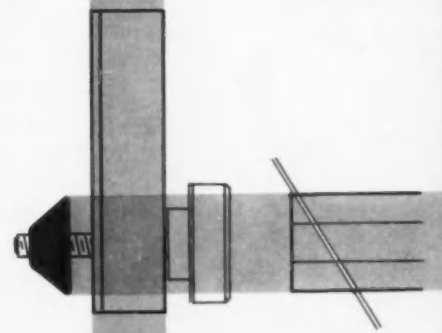
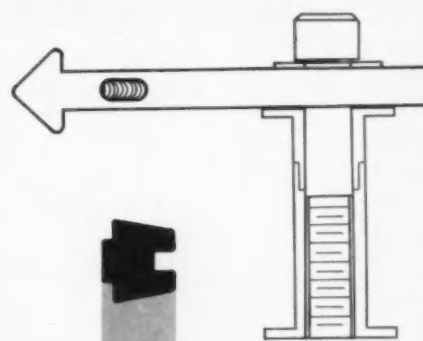
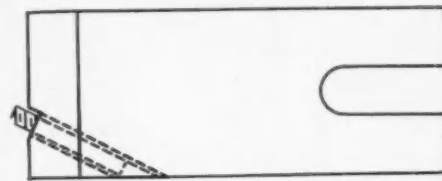
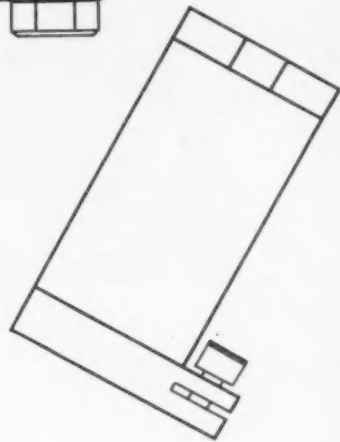
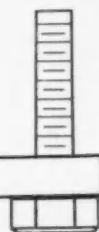
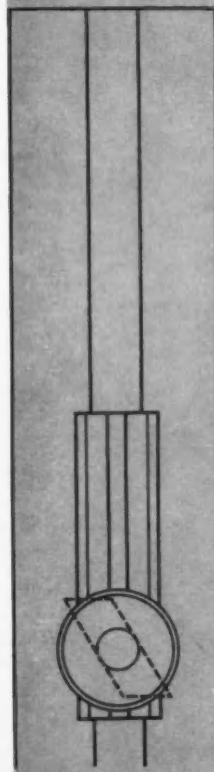
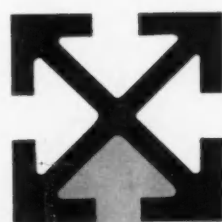
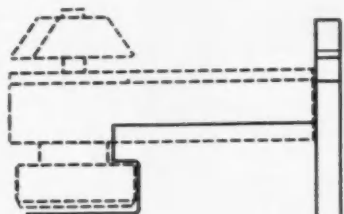
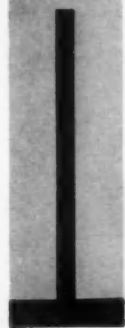
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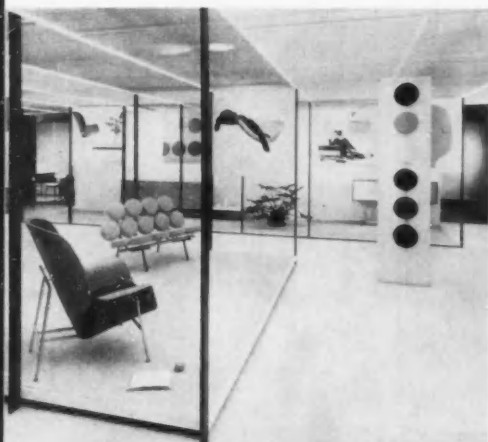
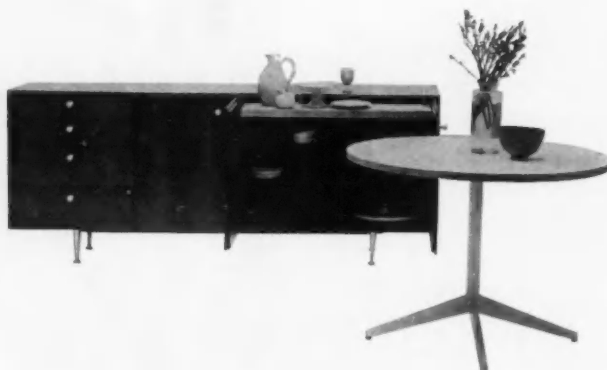
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Drawing by Harold Beckman





GEORGE NELSON



Lionel Freedman

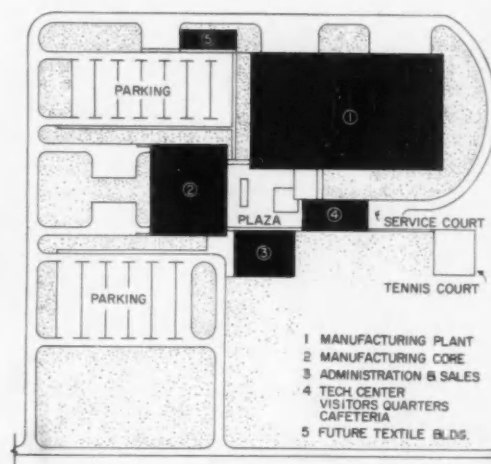


The work of the Nelson office for the Herman Miller Furniture Company represents a highly developed coordinated design program as can be seen by the inclusion on these pages of an ad, two trademarks, a factory site plan, a showroom, a museum installation, as well as examples of the furniture itself. The chair (upper left) which utilizes the latest industrial techniques is made of one piece of sheet metal cut and formed. In plan it makes a perfect triangle. The cabinet shown is of rosewood with porcelain pulls and aluminum cast legs. The George Nelson office has designed all Herman Miller showrooms, including the one in New York (above left). Steel frame (above center) is an identifying symbol for steel cabinets. In the exhibition at the Brooklyn Museum (above right) assembled by the Nelson staff, selections from the museum's collection of period furniture were combined with examples from the Herman Miller line to demonstrate how well designed modern furniture can be compatible with the best furniture of the past.

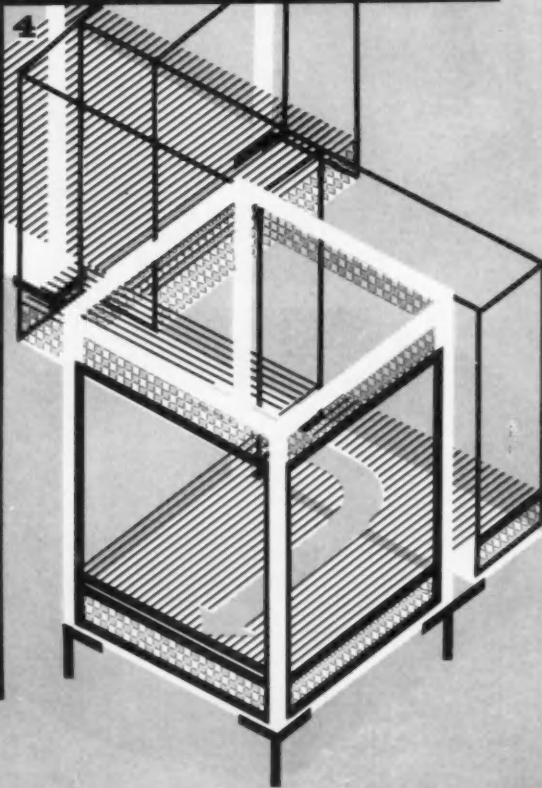
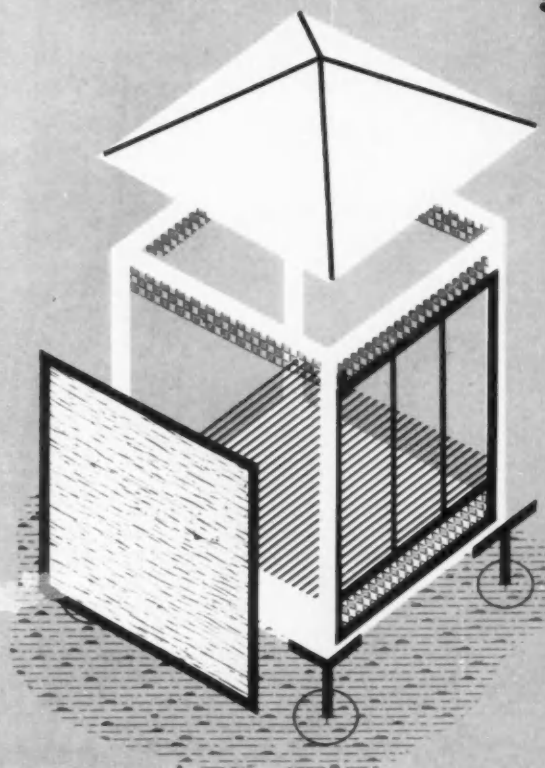
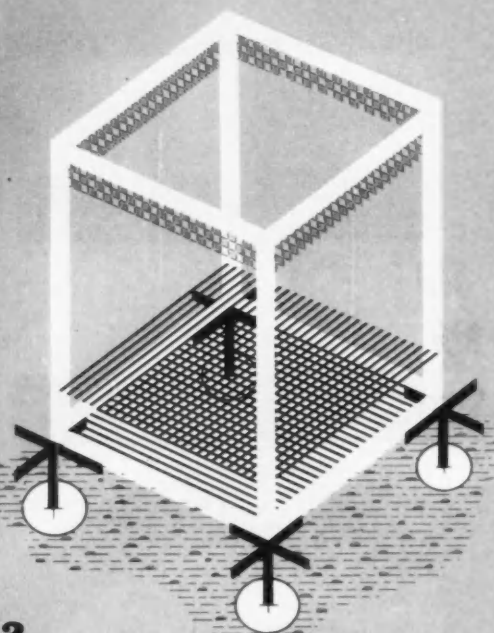
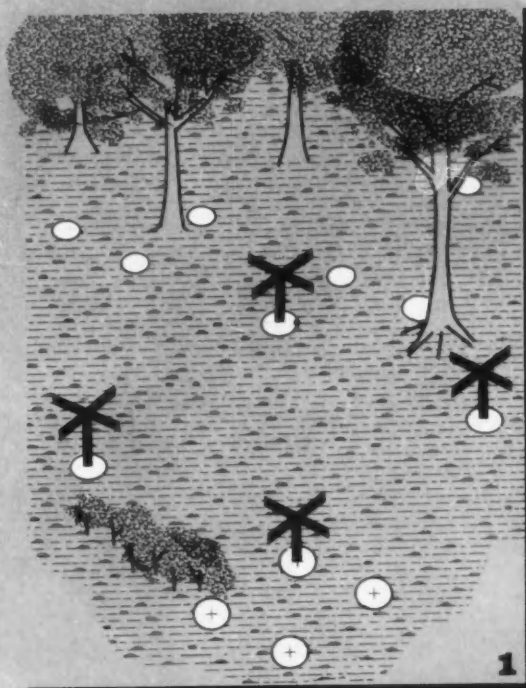
# E



# G



*The letters in the ad (left) stand for "Executive Office Group", a line of furniture for industry based on a modular, interchangeable, flexible system. The Herman Miller symbol (upper right) has become widely familiar. Above: site plan for the expansion of the Herman Miller factory*



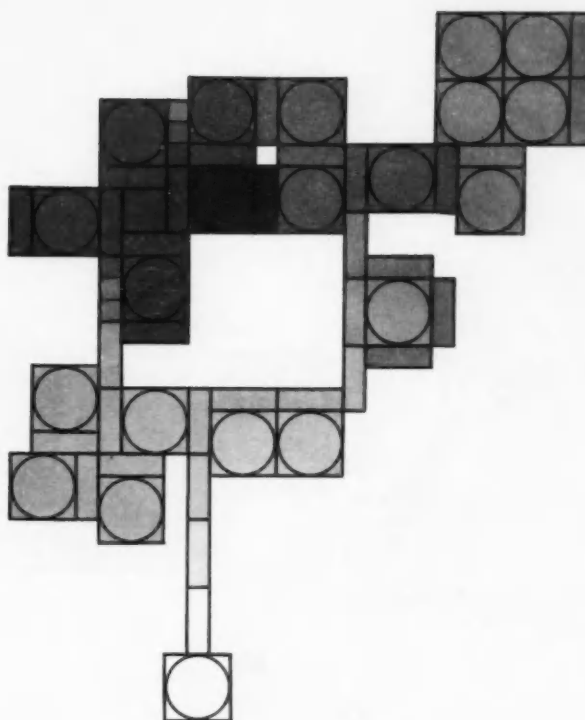


## EXPERIMENTAL HOUSE

BY NELSON AND CHADWICK

In recent years, one building type after another has turned to industry for its major components. Mobile forms of shelter such as trains, buses, trailers and planes exhibit the forms and structures typical of a high level technology, but the house has lagged behind. The George Nelson office has developed an experimental house designed as if it were an industrial product, a structure produced by a highly advanced large-scale manufacturer. In developing a solution no attention was paid to cost or market acceptance. The house is an experiment, not a salable product.

1. **FOUNDATIONS:** To reduce site labor to a minimum and eliminate the use of costly earth moving equipment, this proposal involves the use of a boring machine for adjustable metal foundations.
2. **STRUCTURE:** The structure is a conservative metal cage. The unit is a square, 12 by 12 ft in plan, a size which provides enough space for most furniture groupings. It can obviously be multiplied. A light truss forms the top member of the frame. Floors are used to brace the structure.
3. **WALLS, ROOFS:** Walls could be made of light weight material in large sizes. Roofs were considered as a symbol of the needs of people, emotional as well as physical. It is quite clear that top lighting is superior to windows or glass walls in many cases and that the possibilities of visual effects which can be obtained by its use have been fully explored. The dome is indicated in the model as an unbroken surface of translucent plastic. In actuality it would be a complex structure of both metal and plastic, containing thermal insulation, sound absorbing materials, possibly a part of the ventilating system, and devices for light and solar heat control.
4. **CORRIDORS, PACKAGES:** In order to provide flexibility for planning it became necessary to add a second major item of inventory. This is a cantilevered structure 4 by 12 ft in plan which hangs from the frame. It serves as a corridor but is equally usable as a room extender, bed-storage alcove and a housing for service packages. Mechanical and other services are visibly moving in the direction of package installations. Work has already been done by the Nelson office on storage and kitchen packages. Pullman bedrooms and bathrooms suggest other possible extensions of the same idea. Heating-Cooling packages would service the units individually or in groups. All services would come as assemblies to be plugged into the standard framework.



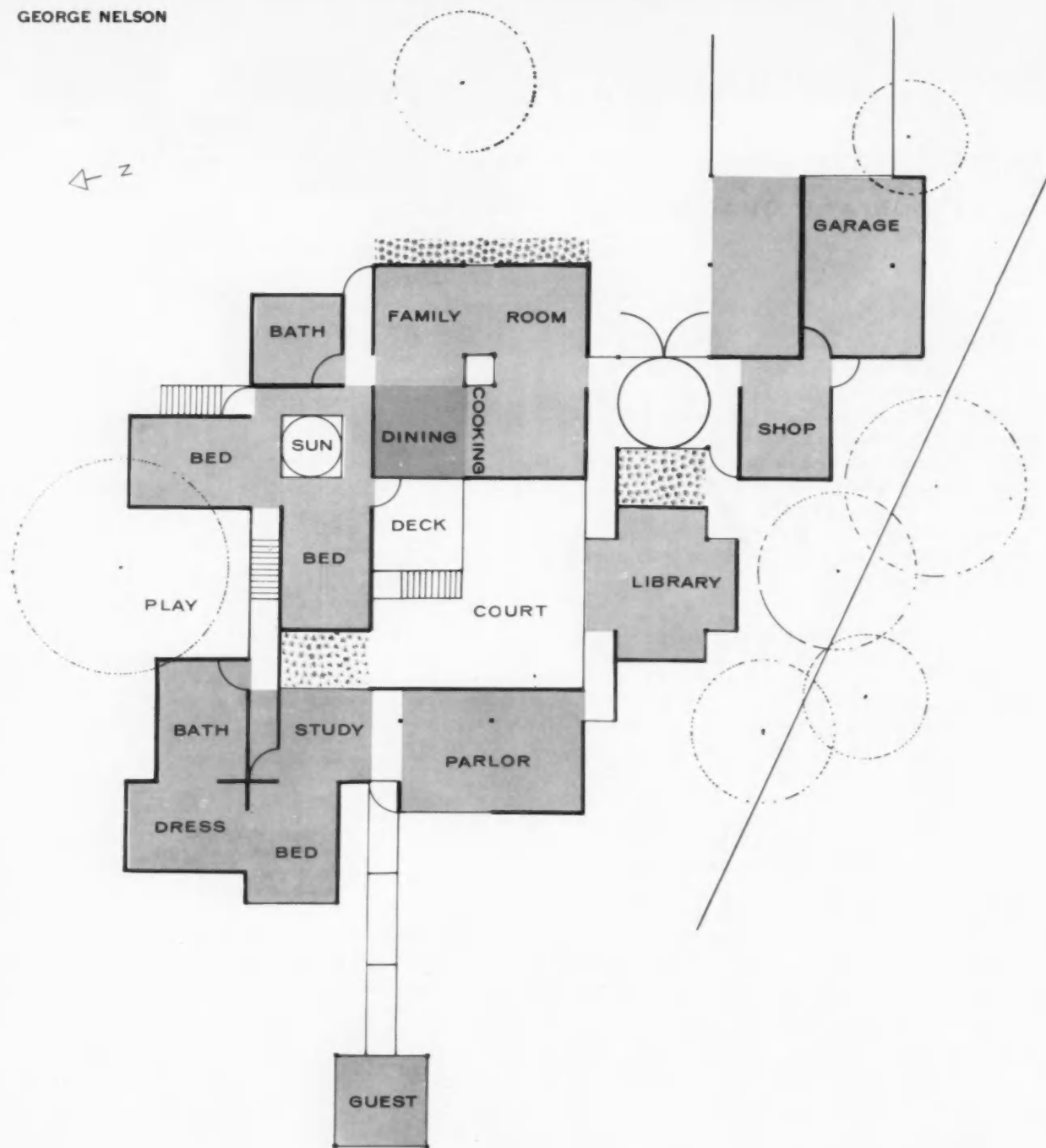
*Above: plan of Experimental House. Tones from light to dark indicate the relative levels of each group of pavilions in relation to a downward slope. The dark rectangle is the highest point, the white square the lowest. The house adapts to different levels of terrain with ease. Opposite page: basic components of house*

*All drawings and photographs on this and following pages were made by Ronald Beckman of the Nelson office who helped develop the Experimental House*

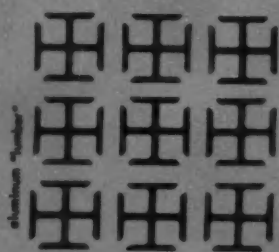
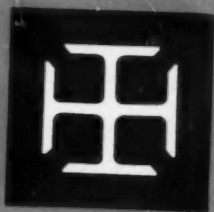
Once the basic units had been worked out the problem of their arrangement presented itself to the designers. A rectangular configuration created a noise problem, because the components of this house were expected to weigh less than today's builder house or prefab and would therefore transmit more sound. To avoid this it was decided to break up the house into a series of semi-isolated living areas using the space between the units as the primary method of controlling sound transmission.

The result of this decision was a plan showing the house as a series of pavilions. One of the virtues of the system is that the plan could expand and contract according to the needs and financial status of the family with very little disturbance to the portion of the house to remain.

The standardization of all parts and the ease with which they could be specified would result in a great cost saving which could be applied to furniture and landscape. The large number of combinations of materials and shapes and the many adjustments to contour and terrain possible afford the architect an opportunity to create interest and variety within a unified whole.

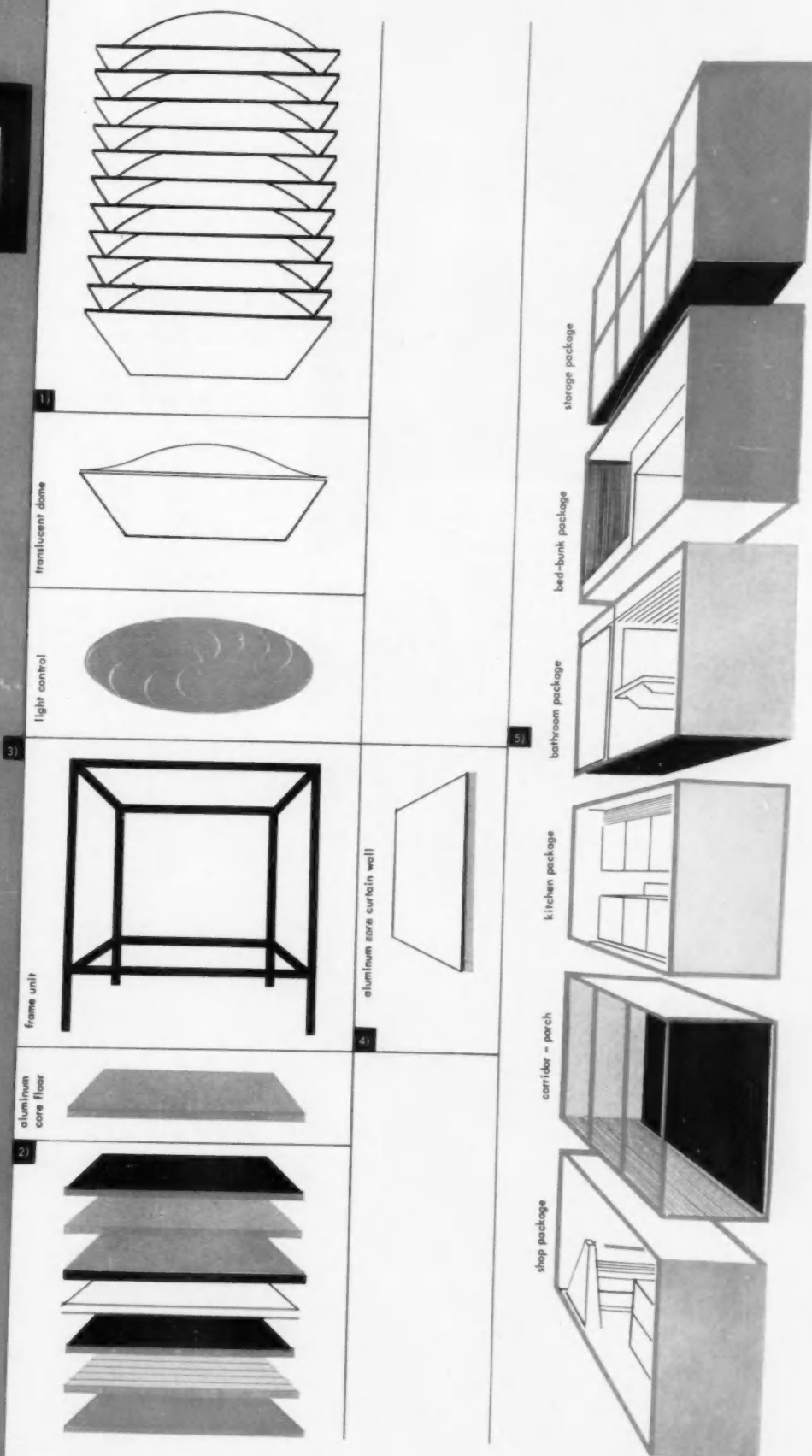


Above: plan of Experimental House shows an elaborate and generous development of the basic concept. Shaded areas show actual useable space created by configurations of 12 by 12 ft and 4 by 12 ft units. Right: a suggestion of the manner in which the components of the Experimental House would be presented in a manufacturer's catalog. The choice of color, materials, mechanical panels, packaged units, and types of wall suggests multiple possibilities of arrangement within the system



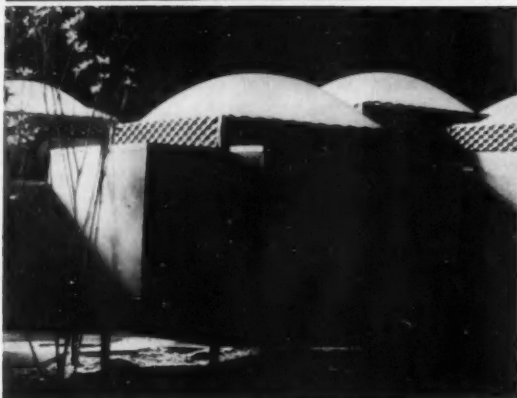
# modular house

- 1) nested domes
- 2) stacked floors
- 3) standardized structural system
- 4) interchangeable walls and floors
- 5) packaged mechanical cores

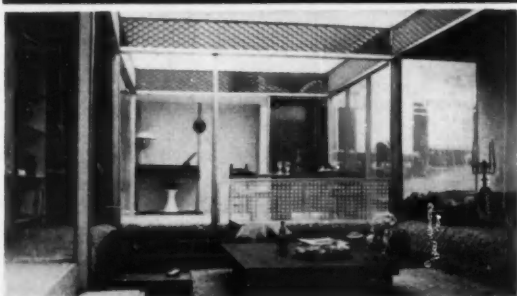




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2



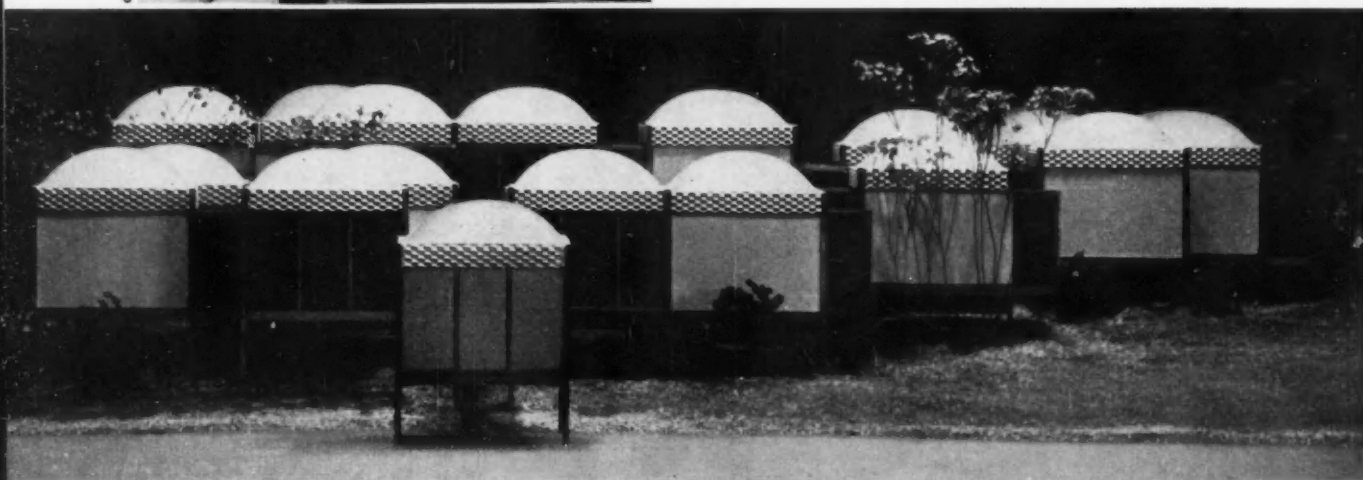
3

"My first exposure to George's house was extremely short, but interestingly enough, my impressions were unusually clear and strong. First—The concept is so simple that it can be grasped in a matter of seconds. Second—It is a module, but it is a true volume module at a scale which seems surprisingly natural. Third—One is immediately drawn into thinking of the space as an experience. An experience in which one wants to take part. It is hard to say what the connections are—remembered Alhambras, or playing house under grandmother's cutting table. Whatever it is, I suspect that it has little to do with conscious style and has a lot to do with human scale—and human need."

CHARLES EAMES

"George Nelson's aluminum house is the most exciting new thinking I have seen in the field of house design. It shows for the first time positively the advantages possible to residential building through the full use of technology and prefabrication. I think it wonderful because it points a way out of our present dilemma in housing. The delight it promises through the interest and surprise inherent in its plan should mean much to our residential future."

MINORU YAMASAKI



4

The Experimental House provides interior spaces of great variety. Simplicity and ease are inherent within the system. 1. Interior shows basic 12 by 12 ft component opening into surrounding 4 by 12 ft connecting elements. 2. The exterior of this grouping. The vertical dimension is also 12 ft. 3. Two 12 by 12 ft units joined to form a larger space enclosure. Note view of adjacent elements through glass corner. 4. The house, partly on stilts, partly on slabs not only lends itself to many plan combinations, but to a variety of elevations. Posts will be designed so that elements can be pinned to them at any vertical point



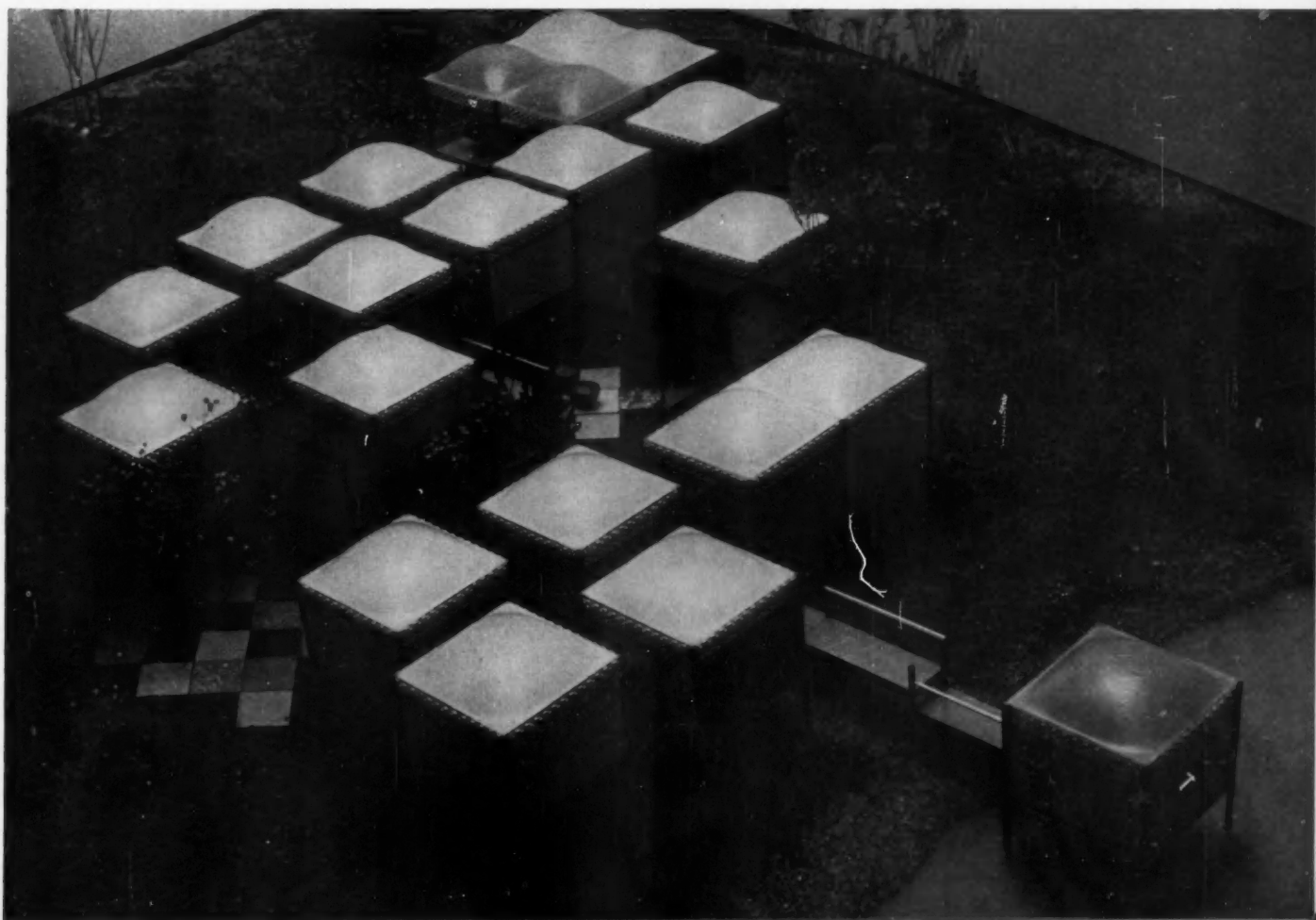
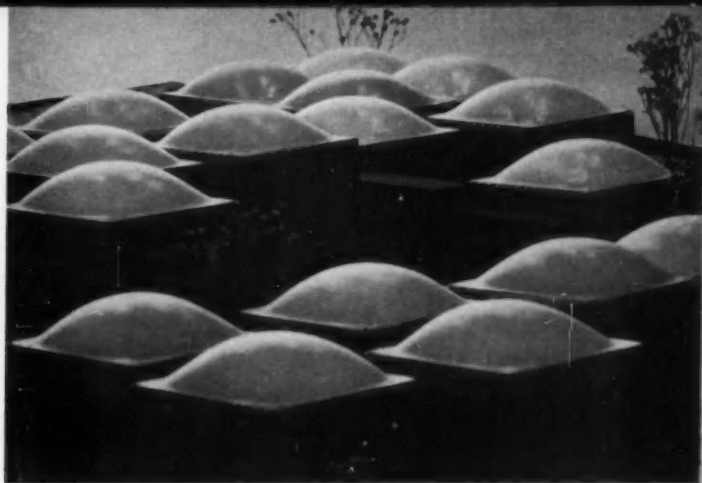
GEORGE NELSON

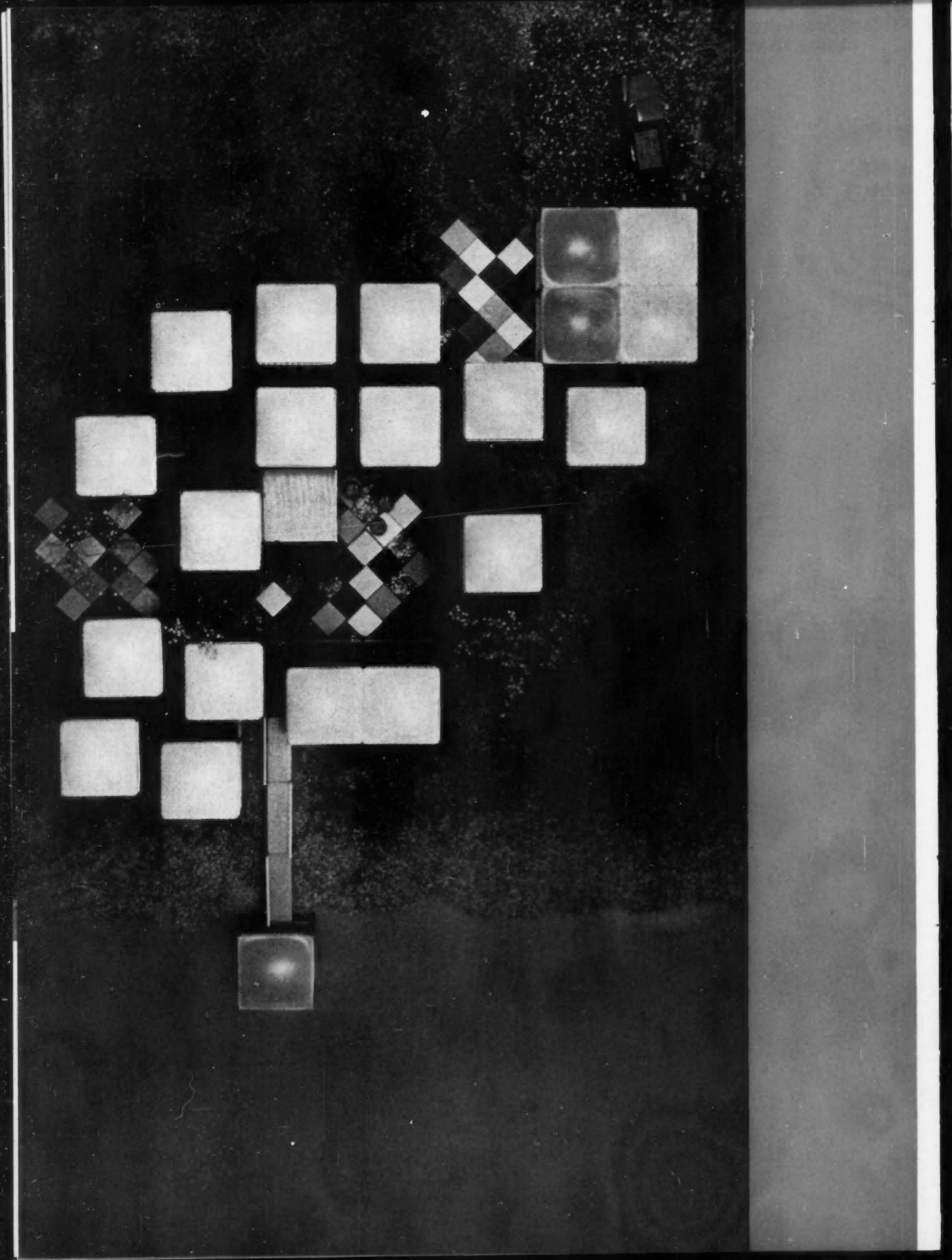
*"Of all the prefabricated and experimental houses I have seen in recent years, this gives me the greatest thrill. Unfortunately, the test as ever will be on economic grounds, that is, on the ability to produce these units with all the services at a lower cost than a conventional house. There is no question though that from a creative and intellectual point of view, it is a most exciting concept. I hope some industry will finance its development."*

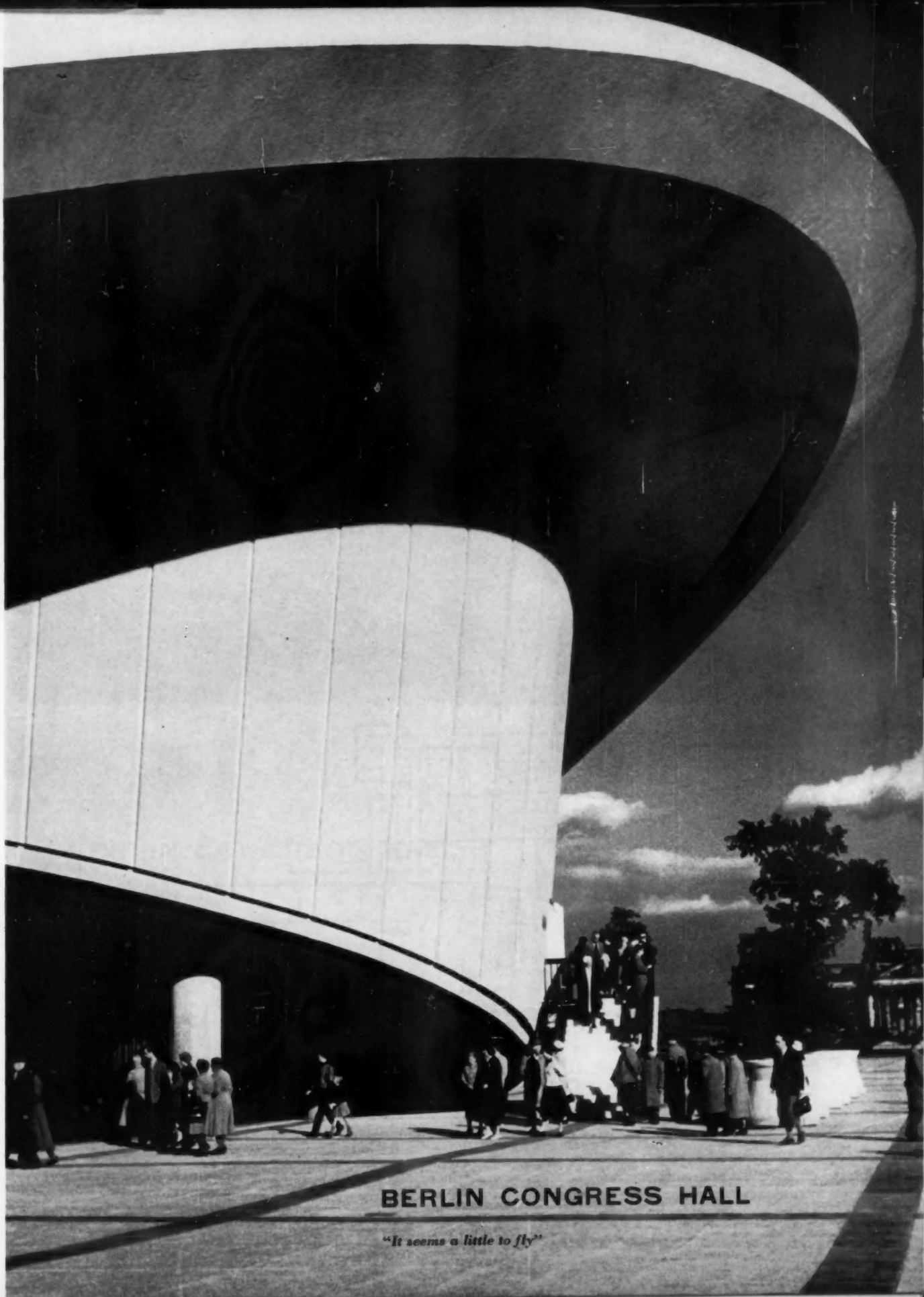
PIETRO BELLUSCHI

*"George Nelson has treated his Experimental House as an aspect of product design rather than architecture. By taking advantage of American methods of production, distribution and obsolescence, he is able to offer a product technically superior to its handcrafted competitors. The design also provides an unexpected luxury by way of its elegant pavilion-like plan."*

ARTHUR DREXLER

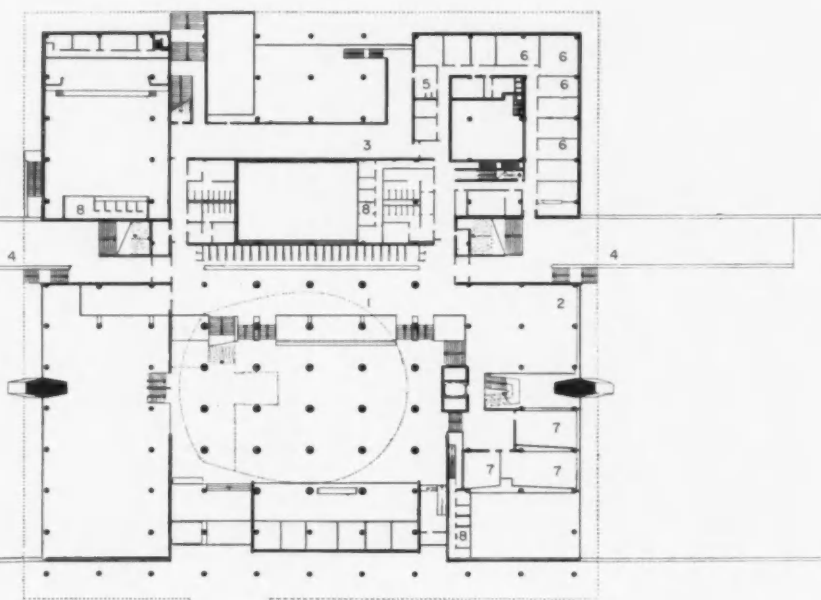






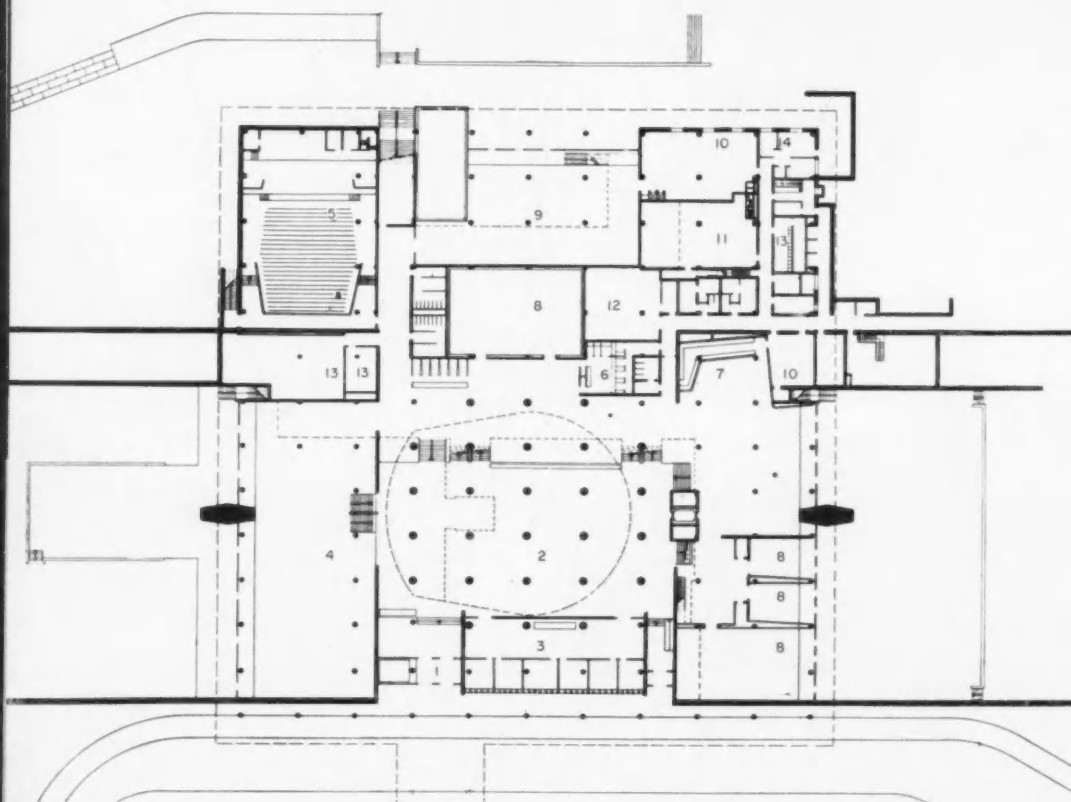
**BERLIN CONGRESS HALL**

*"It seems a little to fly"*



#### MEZZANINE

1. Foyer and Wardrobe
2. Lounge
3. Restaurant
4. Entrance Ramps
5. Serving Pantry
6. Permanent Administration
7. Conference Rooms
8. Translation Booths



#### GROUND FLOOR

1. Entrance
2. Great Hall
3. Congress Administrative Facilities
4. Exhibition Hall
5. Theater
6. Telephone and Wire Facilities
7. Bar and Lounge
8. Conference Rooms
9. Restaurant
10. Kitchen
11. Boiler Room
12. Receiving Room
13. Services
14. Caretakers Apartment





Joachim Diedrichs (photo page 143, Winner)

## BERLIN CONGRESS HALL

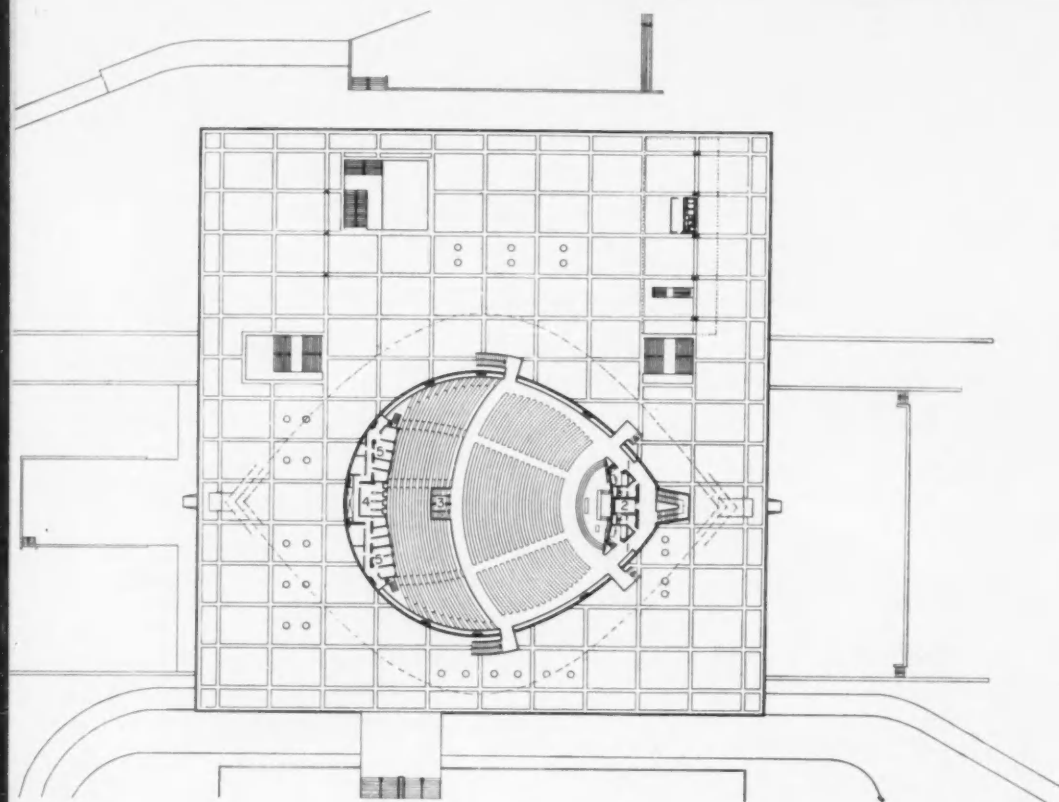
*Architects: Hugh Stubbins and Associates  
Associates: John Myer and Jack Gensemer*

*Berlin Associates: Düttmann & Mocken  
Structural Engineers: Severud-Elstad-Krueger  
Acoustical Consultants: Bolt, Beranek & Newman*

*American Institute of Architects advisory committee to select the architect was comprised of: Ralph Walker, chairman; Leon Chatelain, Jr.; Howard Eichenbaum; Moreland G. Smith. Mr. Walker is chairman of the Benjamin Franklin Foundation, set up to take charge; other members of the advisory committee serve the Foundation as directors.*

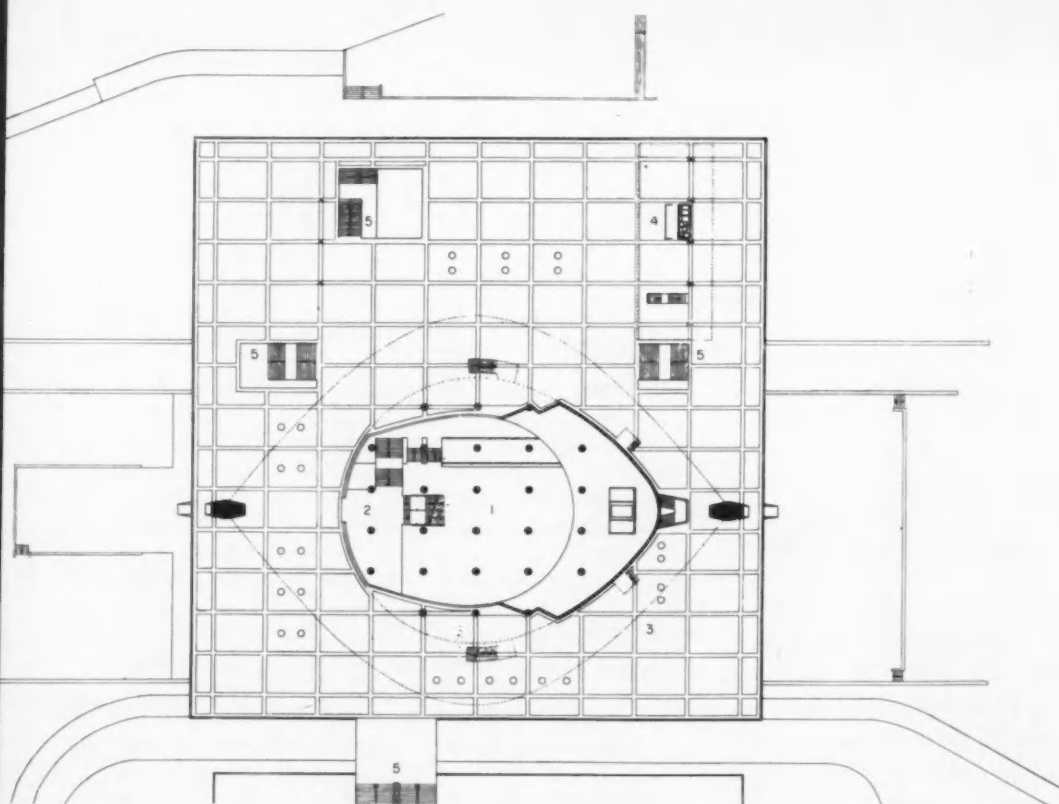
IN ORDER TO SEE this design in its proper context, it may be necessary to make a conscious adjustment in visual habits. It is necessary to realize that in this instance the spectacular, inventive, structure-formed design was the means, not the goal, of the architect. The committee in charge of the project sought a symbol for freedom of thought and expression, something to proclaim to West Berlin, and especially to East Berlin, that Uncle Sam encourages innovative enterprise. So this is inventiveness addressed to an idea to be expressed, not a rationalization of a dominant structural theme. So, Dean Hudnut tells us (ARCHITECTURAL RECORD July '57), were the gothic cathedrals.

This building would be welcomed if the reverse were true. Surely we should find it good, perhaps great. We should be thankful for its daring, knowing that each



#### AUDITORIUM

1. Retiring Rooms
2. Elevator
3. Main Entrance
4. Projection Booths
5. Translators' T.V. and Radio Booths



#### PLAZA

1. Upper Part of Great Hall
2. Foyer
3. Plaza
4. Cafe Bar
5. Stairways



Wimmer

## BERLIN CONGRESS HALL

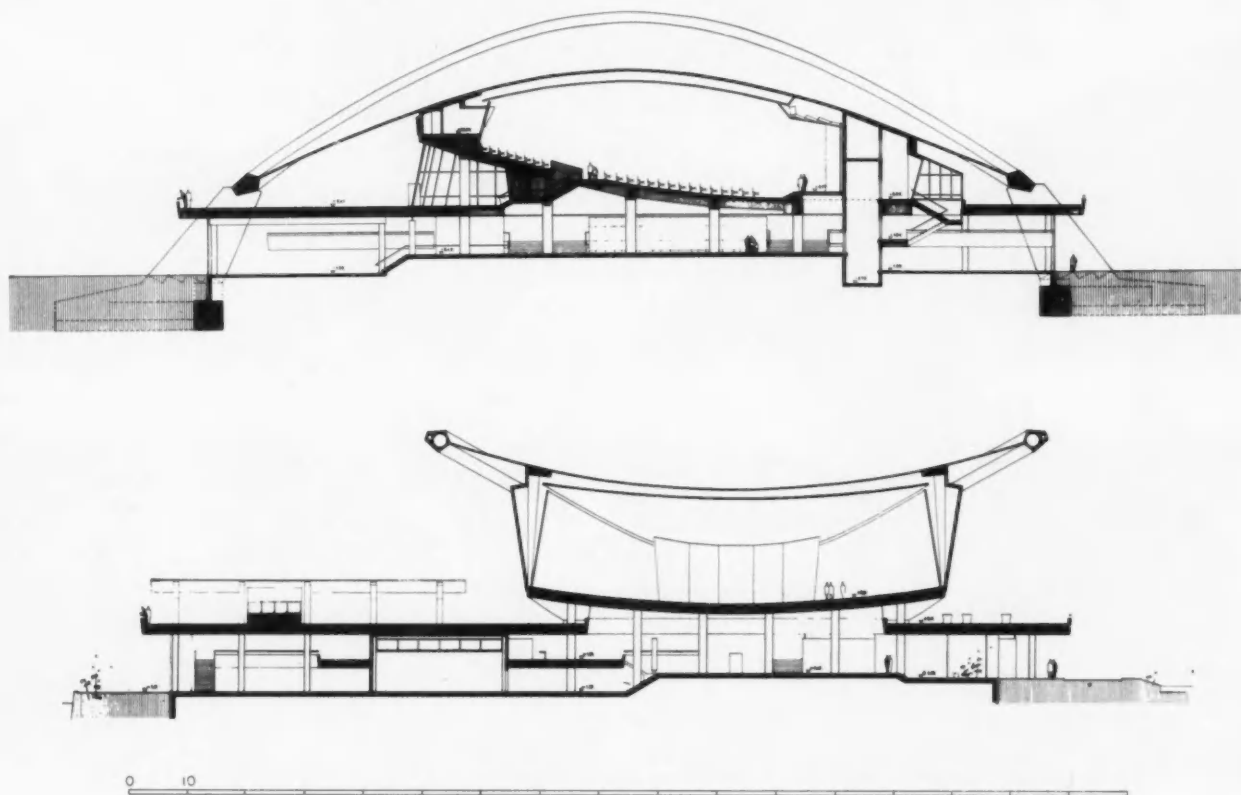
new idea, set before the world in actuality, adds something in acceptance of creative architecture. But the fact that its expression was consciously reached for does heighten the cogency of the design.

That this design was architecturally conceived is easily readable in any exterior photograph. The soaring quality of the concrete arches might not have been so aptly expressed. The outside walls might have been placed at the outer edge, with entirely different effect. It might then have looked like a stepped-on tin can. Or, horrors, the arches might have been concealed.

Clearly the motivation was architectural. Small wonder; for when did an architect ever get so clear a call to creative thinking? Indeed the praise being showered on this building, after its recent opening, might be taken as testimony for a unique system of

selecting an architect — asking the A.I.A. to name a committee to name an architect. Then Mrs. Eleanor Dulles, for the Department of State, the architect, and the selecting committee visited the site to discuss American participation in the Exposition; they agreed on a permanent building "for international congresses dealing with arts, science, letters, government and other matters of cultural interest to men of all nations." A strong architectural orientation, both in procedure and in program.

The concept of the building which resulted is a rather important one in international relations. While the building clearly is to speak for America, it is to lend its voice toward fostering international cultural relations, not toward saber rattling. Says the brochure: "This international Conference Hall is representative of a



new building type. At present the United Nations General Assembly in New York, the UNESCO Building in Paris, and Conference Hall in Caracas are the only structures in the world with comparable facilities. It is the hope of all those concerned with the building of the Kongresshalle that it will serve to enrich the cultural life of Berlin by bringing to the City scholars of all nationalities, and that these people will, in turn, draw inspiration for themselves and their work from their experience here." What might have been just another temporary building for a Fair thus becomes a permanent influence toward international understanding.

If this is a fairly involved message for architecture to communicate, this design seems to have spoken effectively to those who have experienced it. A wide variety

of adjectives includes: beautiful, gay, dignified, jaunty, soaring, earthbound but floating, sweeping, inspiring, and so on. Clare Booth Luce, speaking at the dedication ceremonies as the U. S. official representative, said, "it seems a little to fly."

Mrs. Eleanor Dulles, who acted throughout as the client, told *ARCHITECTURAL RECORD*: "This is the most beautiful building constructed in the last 100 years. The perfect balance creates a soaring, floating sensation, but the two anchors on either end keep it earthbound, much like a rainbow. The building has dignity and quiet, but suggests great strength. . . ."

Working to this end, Stubbins has utilized to the full the freedom and power of the basic structural idea. When, after being entranced by plastic form and curves and visual beckonings, one begins to observe inquir-





Wimmer

## BERLIN CONGRESS HALL

ingly, he might notice first of all the manipulation of the exterior walls. Notice (transverse section) that both exterior and interior walls are splayed. At the top the outside wall returns to its projected starting point, forming a recess under the arch. This pocket contains floodlights to emphasize the freedom of the roof from side supports and add to the illusion of gliding. At the bottom, the base of the wall rises and falls in a great sweeping arc, defining the form even more dramatically since this sweep occurs at eye level.

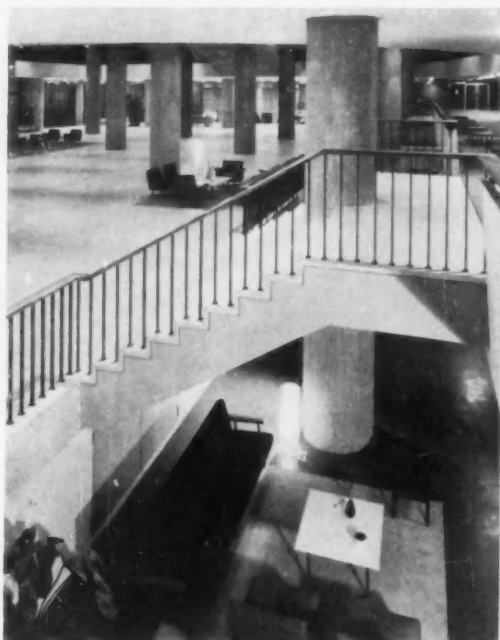
Looking more closely one would discern that everything about the siting of the building tends to increase the rising quality of the design. Firstly, the site itself joined in the suggestion for development of a soaring form; it was so very flat, so open; if the architect was not consciously visualizing it as an airfield he was

acutely conscious of a need to reach upward. For a building program that called for a low building the traditional verticals were unthinkable. So the architect disposed his exhibition spaces and others in low, wide plaza-like organizations, these making a platform from which the auditorium might take off. Also he sloped the site gently upward toward the platform so that the parklike surroundings seem to start the upward curves. The river, at one end, the pool at the other, are also useful in this heightening effort.

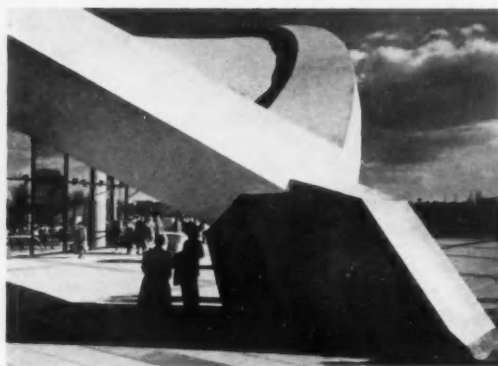
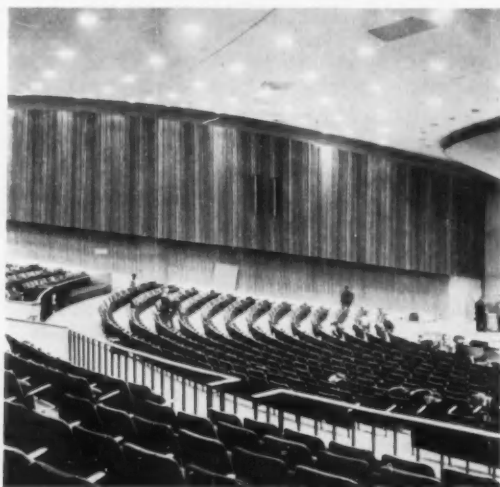
The scheme gains, rather than loses, when the scrutiny gets penetrating on the practical side, and it is nice to observe that the engineer is happy and the cost accountants content. Severud has here considerably extended the promising work with arch-supported hung roofs. This one is of concrete (the acoustical engineers



Kessler



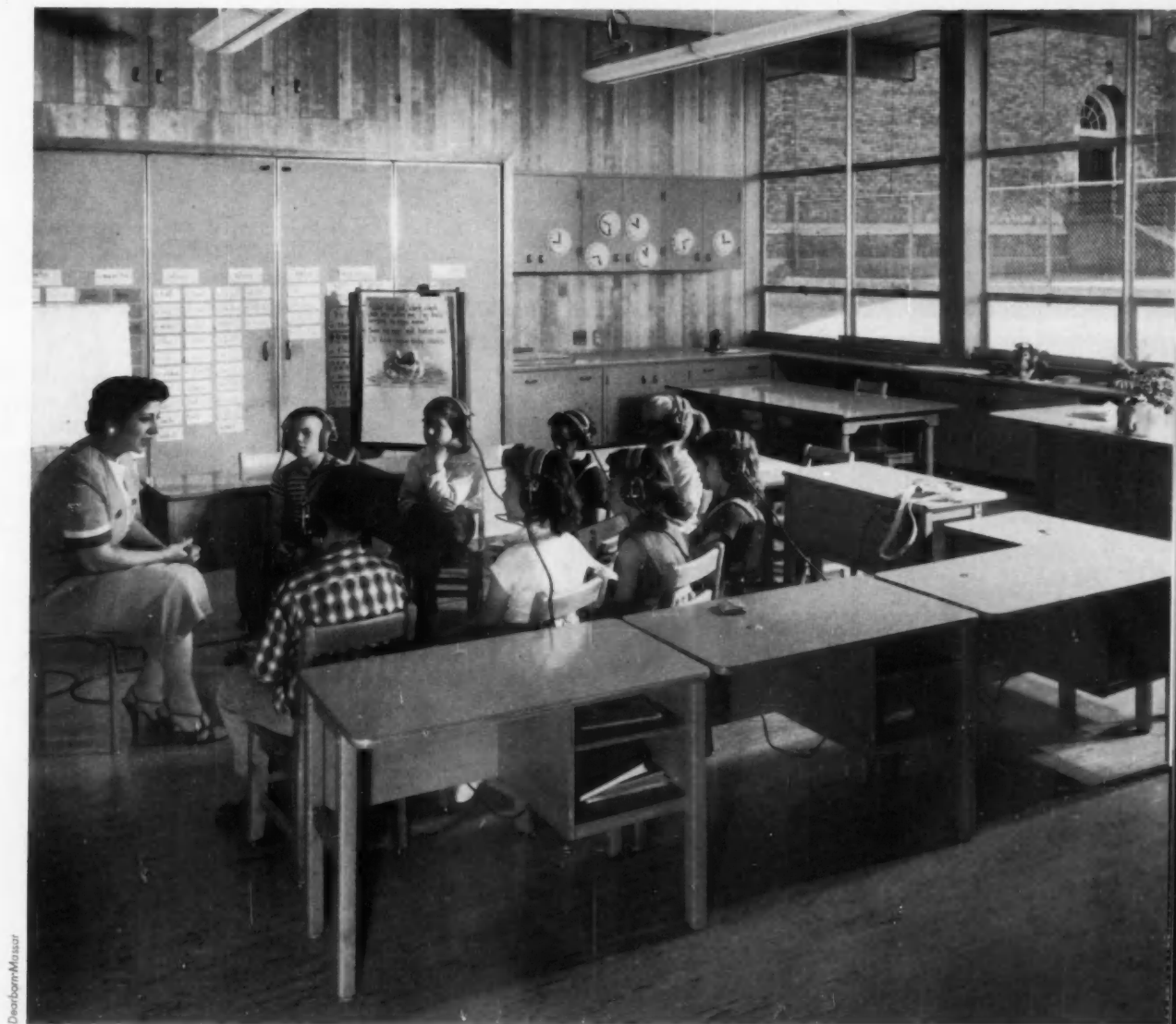
Kessler



Wimmer

# BERLIN CONGRESS HALL

wanted 2½ in. of solid concrete, unbroken by the openings of expansion joints, to insulate the auditorium against noise of jets overhead). The concrete roof is suspended in a catenary curve from the huge arches. Racking loads are taken in a huge concrete compression ring around the top of the auditorium walls, where the structure is held stable against overturning. The expansion problem here became quite complicated, but did not add substantially to cost. The catenary curve was inherently conducive to good acoustics. As to cost, Severud says it is quite inexpensive for a wide span building. This would seem to be, then, an innovative system which contributes a good deal of mental satisfaction to the sensual ones so consciously sought in the design. And if the building "seems a little to fly," well, it does seem to move forward.



## THREE SCHOOLS FOR DEAF CHILDREN

*1. Tucker-Maxon Oral School, Portland, Oregon*

*Belluschi and Skidmore, Owings & Merrill, Architects*

*2. Hosford School Addition, Portland, Oregon*

*Belluschi and Skidmore, Owings & Merrill, Architects*

*3. American School for the Deaf, West Hartford, Connecticut*

*Louis J. Drakos, Architect*

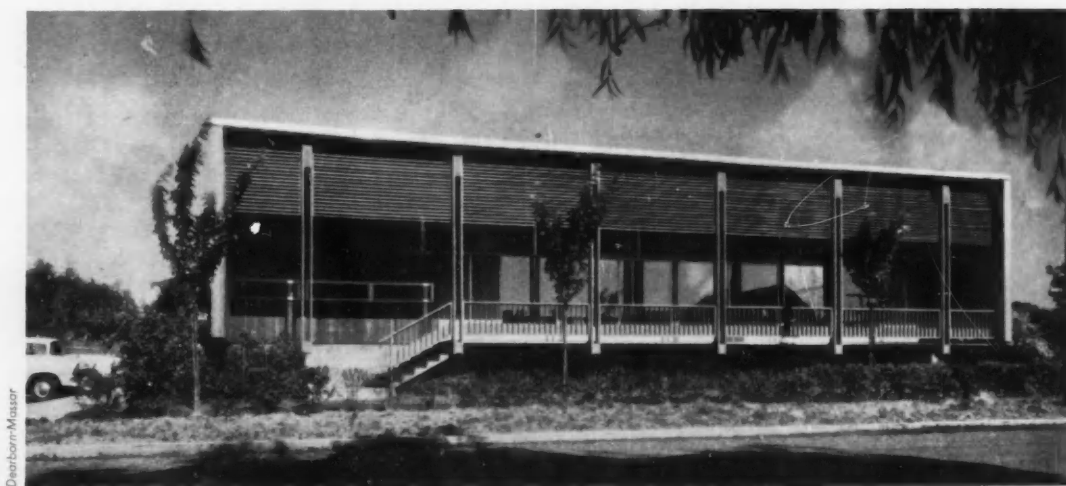


*A conscious effort was made to express the functions of beams, purlins, decking. Beams are stained a blue gray, the purlins light gray. Warm primary colors and the natural cedar and hemlock complete the color scheme. The residential quality, with emphasis on landscaping, has won over the neighbors who at first objected*

## RESIDENTIAL QUALITY FOR SCHOOL FOR DEAF CHILDREN

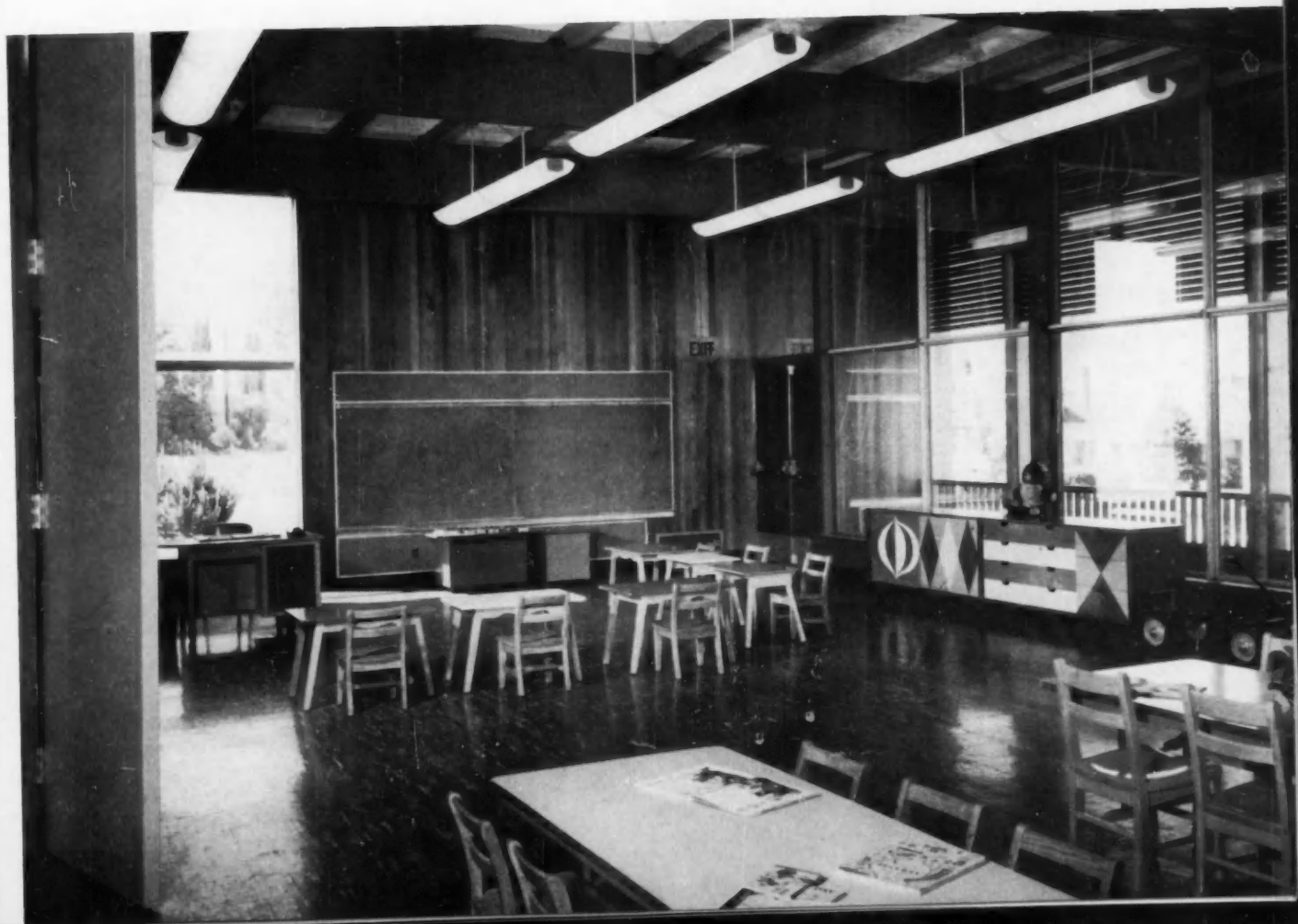
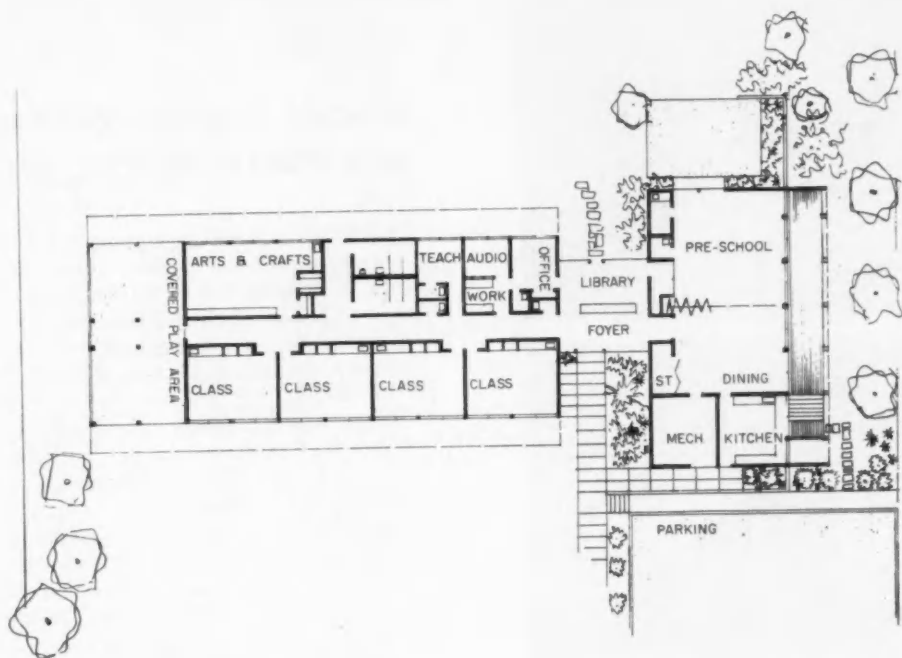
*Tucker-Maxon Oral School, Portland, Oregon; Architects: Belluschi and Skidmore, Owings & Merrill; Structural Engineers: Cooper & Rosé; Mechanical Engineers: J. Donald Kroeker & Associates; Electrical Engineers: Pettingell & Kelley*

THE NEEDS of the child handicapped by hearing difficulty are so insistent as to demand a separate school, and they guide the architect in the design of the building for it. The business of ordinary communication, which comes so easily for the normal child, is very difficult for the one who can't hear; it must be the first task of the school. Beyond that, the child naturally has adjustment problems, needs a warm and friendly environment. Those two major factors guided the planning here. This is a private school, small, in a residential neighborhood. Classes are limited to six children. Residential scale and appearance were essential, not alone for the problem itself, but to overcome objections of nearby property owners. Landscaping was stressed in both budget and execution. Wood frame construction with laminated beams; exterior is of cedar with hemlock siding in corridors and classrooms. Heating system is primarily of the radiant floor type. Cost per sq ft, in 1953, was \$11.75.



Deborah Massor





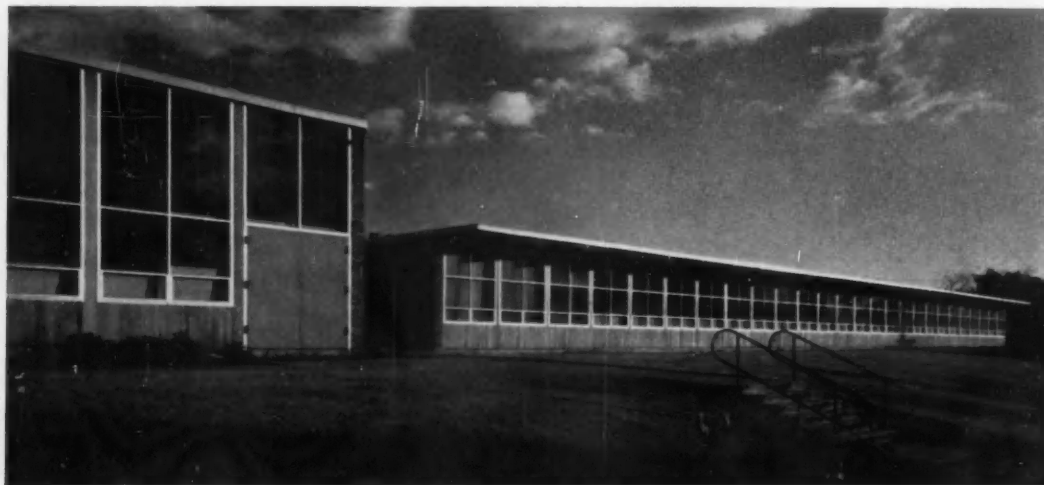


*Relationship to the existing school building was something of a problem. Solution was to put the kitchen and "cafetorium" near the older building, on grade, so that this portion could be used by either group of children without disturbing the other. Classroom unit for deaf children extends out beyond existing grade to form covered play area*

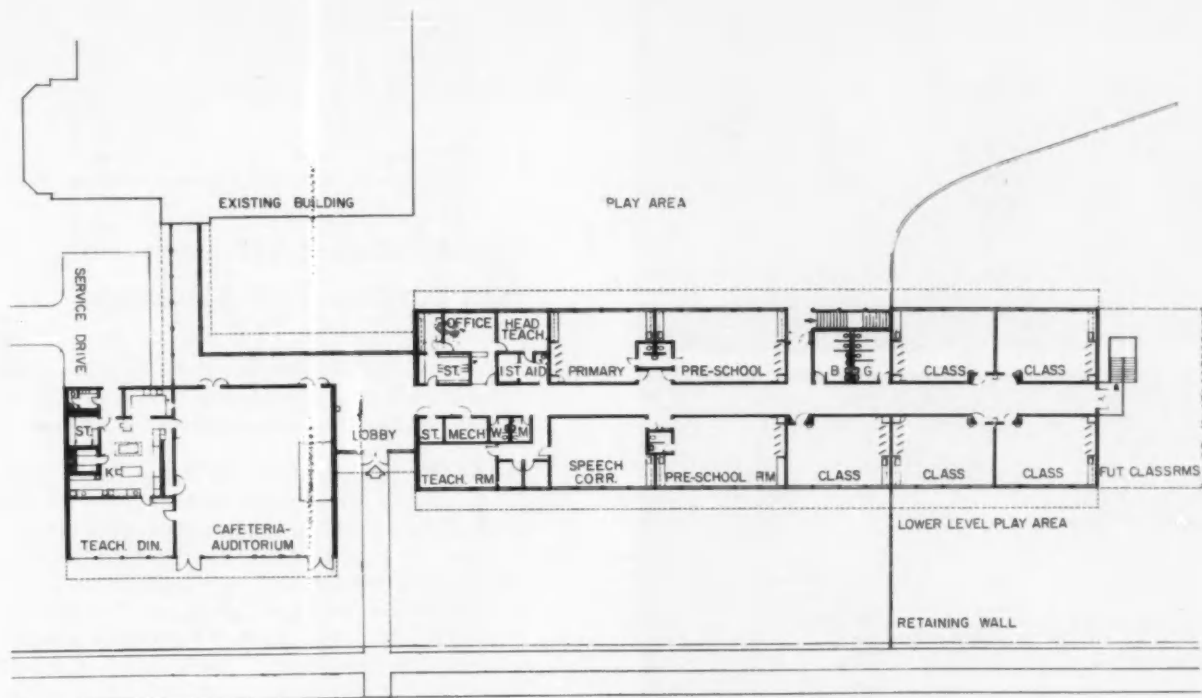
## SCHOOL FOR THE DEAF AS A PUBLIC SCHOOL UNIT

*Deaf Children Addition to Hosford School, Portland, Oregon; Architects: Belluschi and Skidmore, Owings, & Merrill; Structural Engineers: Cooper and Rosé & Associates; Mechanical Engineers: J. Donald Kroeker Associates; Electrical Engineers: Grant Kelley & Associates and George Pettingell*

THIS SCHOOL is a unit of a regular public elementary school, the educational concept being one of separate training for the child handicapped by deafness but full opportunity to associate with normal school children in recreational activities. Classes are kept to smaller than standard size, ten to twelve; rooms are therefore smaller than regular classrooms. These rooms do require some special hearing aid equipment and grouped seating arrangements. Kitchen and dining facilities for the entire school were built as part of this project. The "cafetorium" is placed so that it can be used by the handicapped ones for their programs, or by pupils from the regular school, to which the deaf unit is connected by covered passage. The classroom wing extends from this point away from the existing building. The deaf unit has its own administration spaces; also special speech training room and audiometer test room, and so on. Cost is given at \$12.32 per square foot.



Dearborn-Mosier





*The large playroom is the scene of much of the training effort, since the three-year-old must not be pushed too hard. The regular classrooms are three separate units in a finger-plan scheme, as a wing extending out from the residential building. Costs of the reinforced concrete buildings was \$11 a square foot, or a total of \$300,000*

## PRE-SCHOOL UNIT FOR SCHOOL FOR THE DEAF

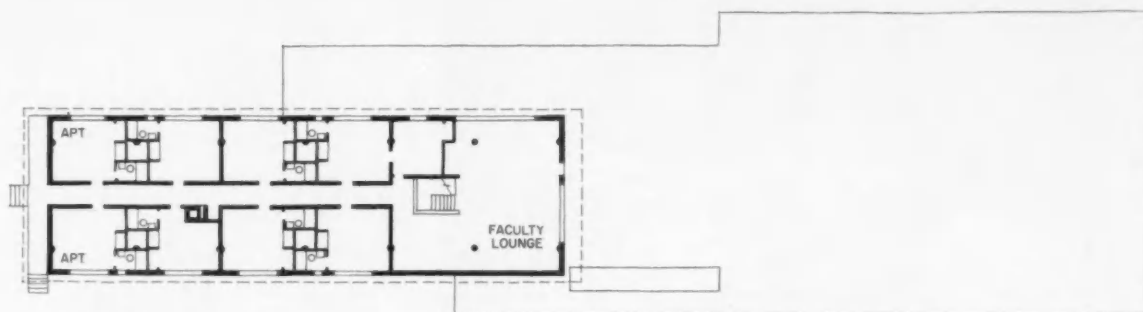
*Nursery and Kindergarten Building, American School for the Deaf, West Hartford, Conn. Architect: Louis J. Drakos; Engineers: Marchant & Minges*

AS AN INSTITUTION this is the school for the deaf which started a movement back in 1817. It has gradually grown, has moved to new locations a couple of times. Its superintendent, Dr. Edmund B. Boatner, has long felt the need for a building where the pre-school child could start the difficult effort to learn communication, and this new building is another pace-setter in that respect. It is a boarding school; indeed most of this project is residential quarters for children and staff, with a small group of classrooms (not on these plans). The children live in dormitory units, the staff in various apartments in the same building. There are accommodations for 51 boarding children, and a few day students may be taken care of as well. Children are taken as early as the age of three, so that training can be given as fast as the child maintains interest, in the effort to lessen the lag that the deaf child usually suffers.



Joseph W. Molitor





SECOND FLOOR PLAN



FIRST FLOOR PLAN





**PRE-SCHOOL UNIT  
FOR SCHOOL FOR THE DEAF**

*Nearly all of the children "live in," in dormitory accommodations. Child-scale bathroom facilities adjoin the dormitory rooms. The bottom photograph shows one of the faculty apartments*



# UNITED STATES EMBASSY OFFICE BUILDING

ATHENS



Photos by Walter Gropius

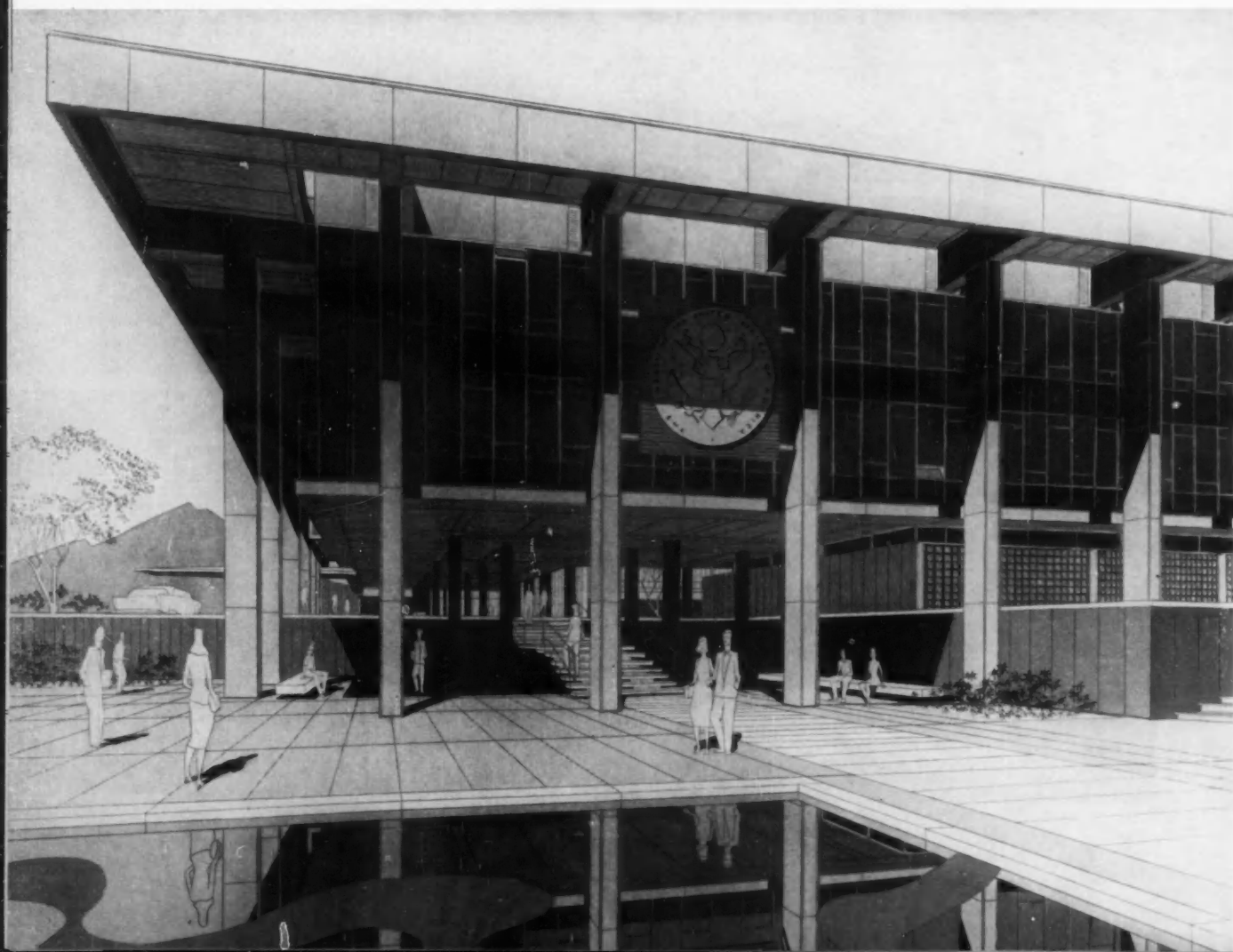
## A R C H I T E C T S

### THE ARCHITECTS COLLABORATIVE

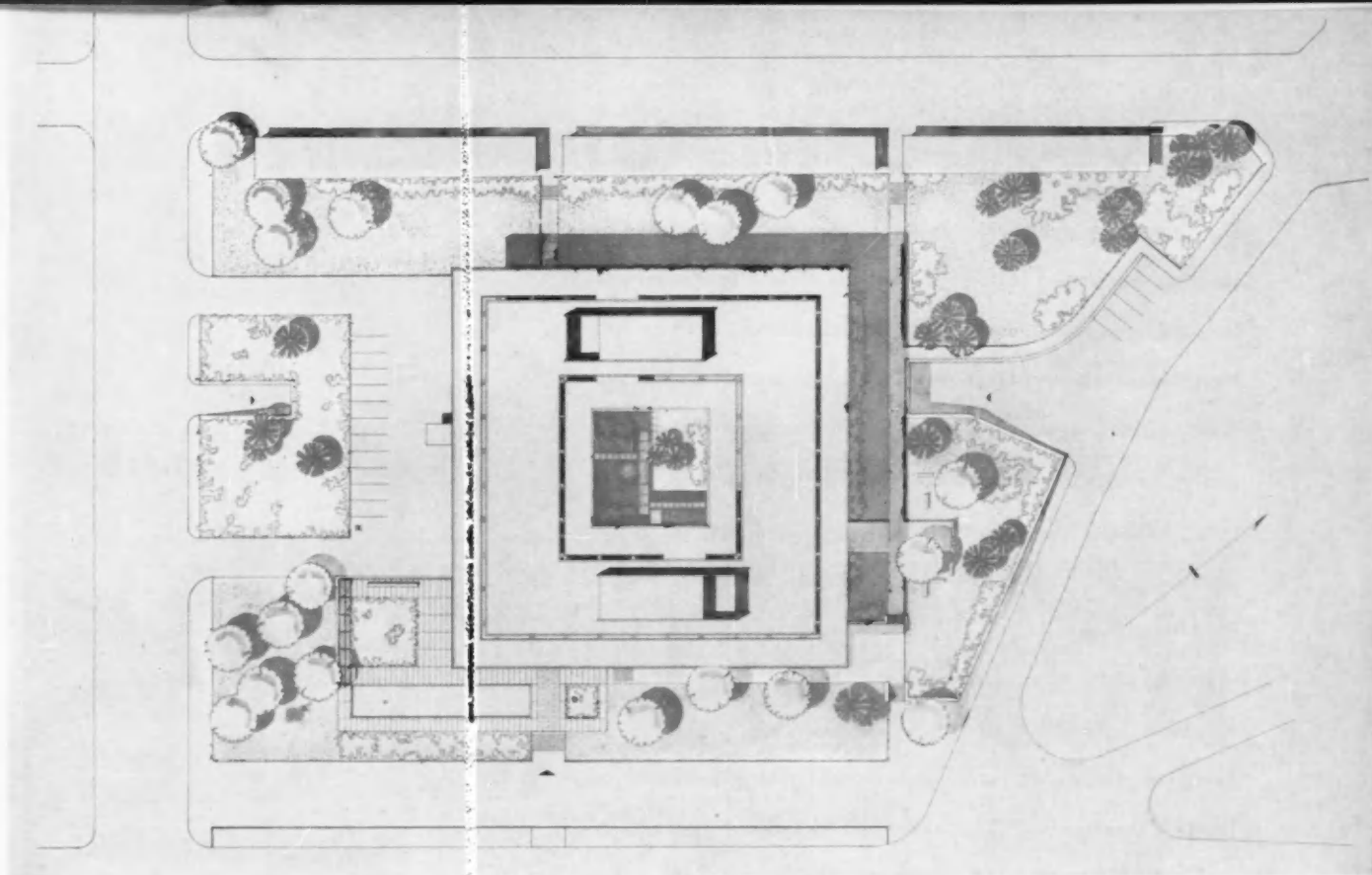
*Partners: Jean B. Fletcher, Norman Fletcher, Walter Gropius, John C. Harkness, Sarah P. Harkness, Robert S. McMillan, Louis A. McMillan, Benjamin Thompson. Associates: Chester Nagel, Richard Brooker, Herbert Gallagher, Witold von Hennenberg, H. Morse Payne, Jr. Consultant: Perikles Sakellarios, Athens*

## E N G I N E E R S

*Mechanical and Electrical Design: General Engineering Associates. Structural Design: Paul Weidlinger; Mario Salvadori, Associate. Engineer in Charge of Design: Antranig M. Ouzoonian. Acoustical Engineering: Bolt, Beranek & Newman*







# UNITED STATES EMBASSY OFFICE BUILDING, ATHENS

Architect Walter Gropius prefaces his remarks on the ideas motivating this design with the view that "architecture begins beyond the fulfillment of practical problems . . . and must manifest a psychological quality or attitude symbolizing its purpose."

He says, "our aim was . . . a building which should appear serene, peaceful and invioling, mirroring the . . . political attitude of the United States. Also, the design should abide by the classical 'spiritus loci' . . . but in contemporary . . . terms."

When complete, this design should meet those aims with consummate distinction.

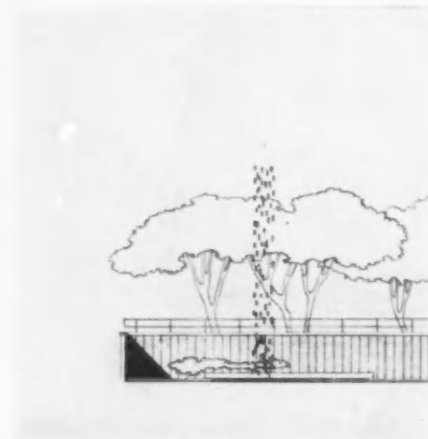
*The sloping site on Queen Sophie Avenue*



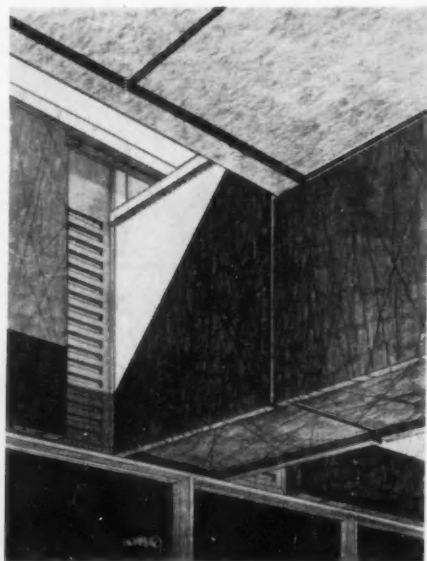
## UNITED STATES EMBASSY OFFICE BUILDING, ATHENS

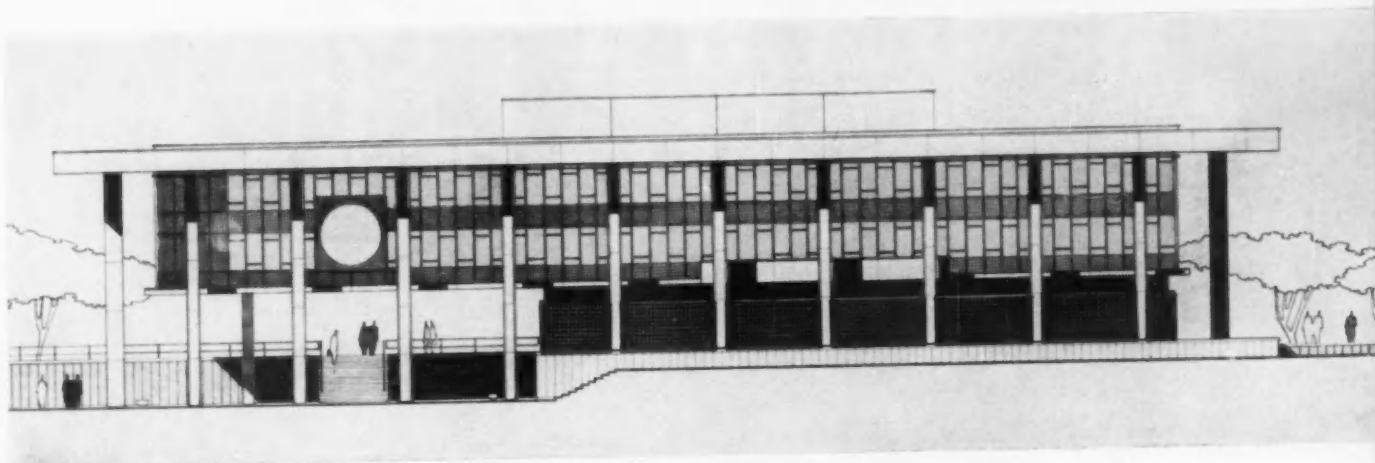
The three-story structure — square in plan — opens inward to a spacious, landscaped patio — also square. Slender reinforced concrete columns, clad in honed white Pentellic marble, front on both the patio and the building's periphery. Each pair of columns supports a girder that carries the 20 ft roof overhangs which will serve to break down the intense sky-glare. The exterior walls for the offices will hang from the girders. At ground level, sun and burglar protection will be furnished by perforated, glazed tile screens, sky-blue in color.

In addition to the white marble that will sheathe and define structural elements, gray Marathon marble will be used in the basement; Santa Marina marble for the stairs, corridors and toilets. The plaza and lobby floors will be finished with terrazzo made of white marble-chip aggregate. The curtain walls will be composed of aluminum and gray glare-reducing glass. To ameliorate the excessive sun-heat, the roof construction will be double, with louvers for through air movement.



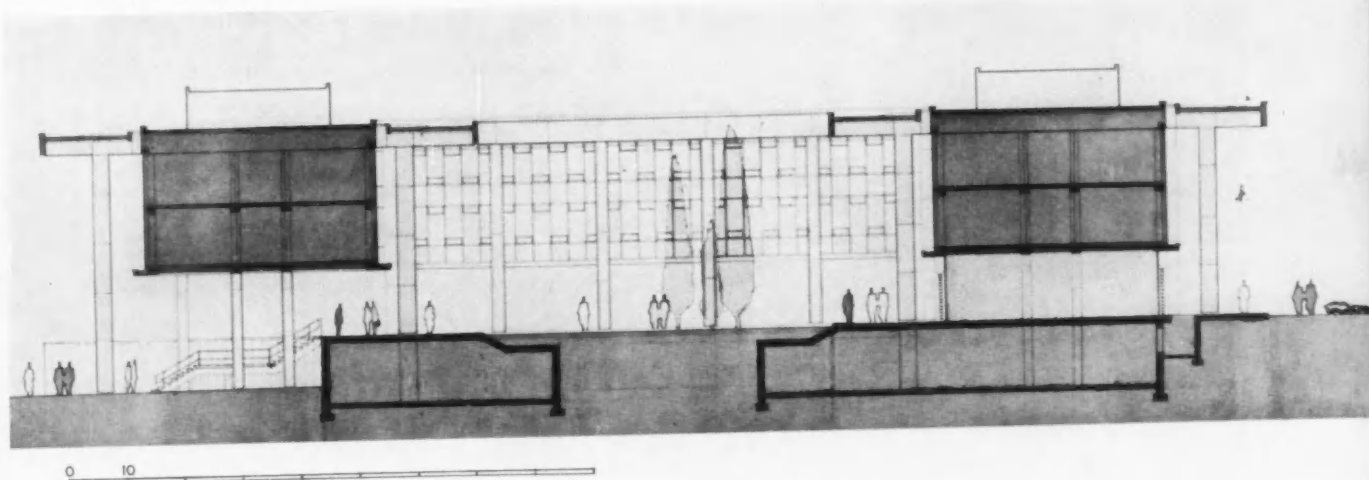
*Detail of louver vents for double roof*





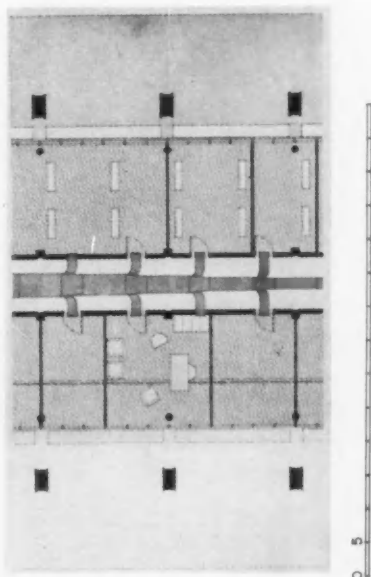
*Elevation on Queen Sophie Avenue*

*Longitudinal cross section*





*In the office layout, below, note roof overhang (shaded, top of plan) punctured by slots for hot air escape. For over-all flexibility, the 3 ft window module coordinates with corridor doors, ducts, lighting, partitioning, and the underfloor phone raceway (lower plan)*



#### UNITED STATES EMBASSY OFFICE BUILDING, ATHENS

Plans at right: the second and third floors will be devoted to typical office areas, while the majority of the enclosed space at ground level will be turned over to consulate facilities, with the exception of the small area at upper left for embassy guards. One-third of the ground floor area will be unenclosed. In the basement, the large central space will park 30 cars, which will enter from the ramp at left. Service and deliveries will enter from the ramp at the right.

All mechanical and electrical services will rise through two vertical shafts adjacent to the stairways, to be distributed at each level through horizontal shafts above corridor ceilings.

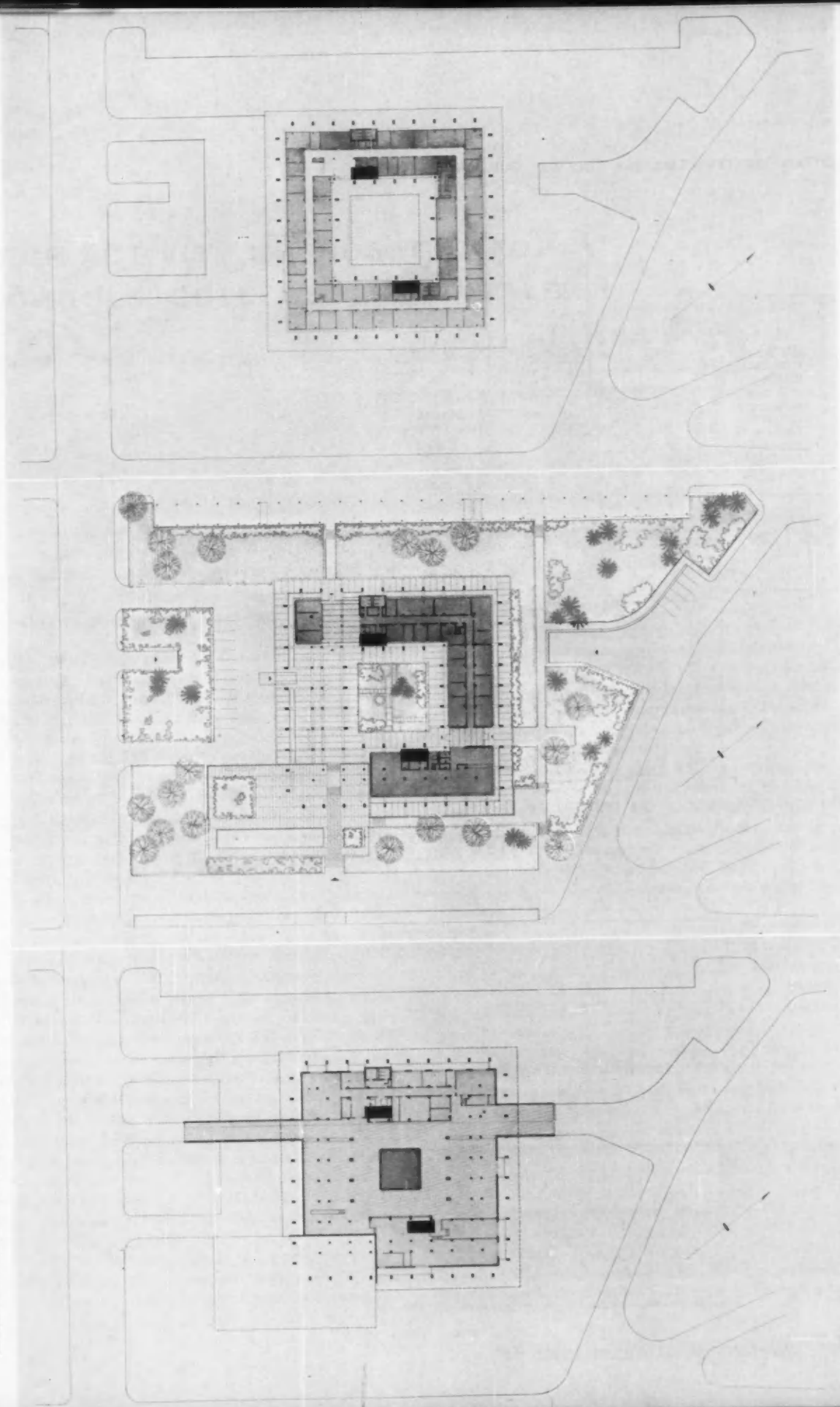
A built-in apparatus for window washing will consist of ladders mounted on rollers which will run on horizontal tracks. The installation will allow a window washer to propel himself laterally along the various faces of the building.



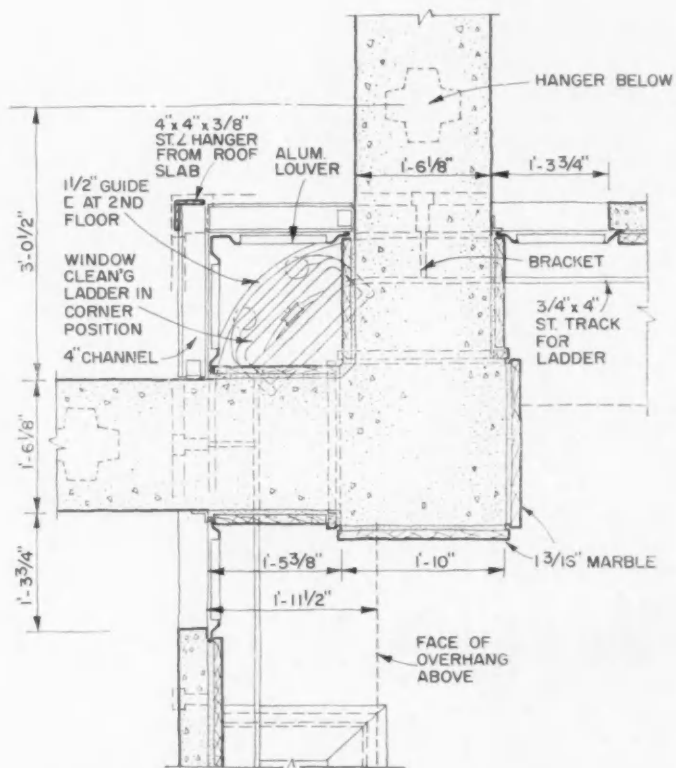
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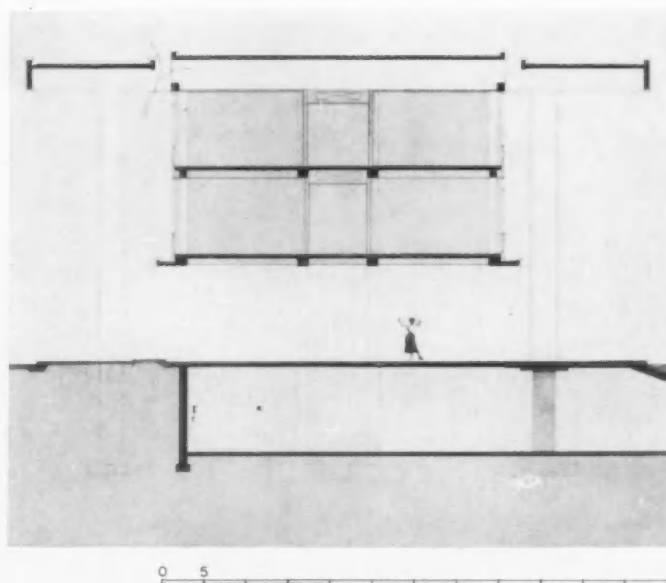
B



UNITED STATES EMBASSY OFFICE BUILDING, ATHENS



Plan detail shows corner of court at roof girder level



# HIGH ACTIVITY IN PROSPECT FOR SCHOOLS, COLLEGES, HOSPITALS

By R. M. CUNNINGHAM, JR., *Editorial Director, The Modern Hospital Publishing Co.*

SCHOOL, COLLEGE AND HOSPITAL construction includes a little more than one-third of all non-residential construction in the United States. By the end of the year, we shall have spent \$4 billion in new construction of schools, colleges and hospitals in 1957, and the best sources of information in these fields estimate that new construction next year should exceed 1957 totals by a modest amount — probably four or five per cent.

## PROSPECTS FOR SCHOOL BUILDING

Approximately \$2.8 billion of the total for 1957 will be spent in the construction of public elementary and secondary schools. Moreover, school construction must continue at this level, at very least, simply to keep pace with the growth in school populations. This year, there are 25,300,000 children enrolled in elementary schools, and 6,900,000 in secondary schools; next year, we shall add 750,000 children to the grade school population, and a half million to the high school population. These are not estimates; these children have been born and are surviving to school age, and it is our statutory responsibility to provide facilities for their elementary and secondary education. If school construction does nothing more than keep up with the birth rate, we must expand our school plant by 25 per cent to accommodate a school age population of 40 million children in 1965. At today's rate of new construction, we are falling behind the population increase.

Of course, there are differences of opinion among educational authorities, and even wider differences of opinion among other interested groups, including taxpayers, about the adequacy of our existing educational plant. The chief school planning officer of one Southern state wrote to *The Nation's Schools* recently, in reply to an inquiry about the school construction outlook for his state, indicating the state was planning to add 1,500,000 square feet of new school construction in 1958. Then he added: "If we had the money to replace antiquated buildings our need would be close to 2,500,000 square feet for 1958."

In spite of the widespread need for new and better school buildings, the charge has been made against public school authorities in recent months that we are

spending far too much money on schoolhouse construction, and that our new schools are "costly palaces" including luxurious, clublike accommodations that have no proper place in the educational process. Considerable national publicity has attended the controversy about so-called luxury public schools.

It would be foolish to deny that any extravagant schools have been built in recent years, or to suggest that all the elements of the modern school can be fully justified in every instance as essential to learning. Obviously, a few communities have been lavish in their provision of school facilities, and some features of some school buildings are dispensable — or, at least, less indispensable than other features.

It should be pointed out, however, that the clublike schools, if any, have been built in our wealthy suburbs. In most communities, in most states, schoolhouse construction is if anything too conservative, too restricted to the bare minimum of classroom and corridor space, and too lacking in all the other facilities that are accepted by most educators, and by most parents of school children, as desirable elements of the learning environment. The concept that education takes place only within the four walls of a classroom is as outmoded as the one-room school. This is not just the view of a few educators dwelling in ivory towers; obviously, it must be the prevailing view about education in our society, because, more than any other institution, the public school reflects what the community wants. Our schools today have athletic fields, and gymnasiums, and auditoriums, and music rooms, and lunchrooms, and domestic science rooms — not because educators have dreamed these facilities up as a method of tor-

turing the taxpayers, but because the great majority of us have wanted our children to have the learning experiences that take place in these environments.

Whether we are talking about an elaborate, glass-and-aluminum structure in Fairfield County or a simple, cinder-block box in western Kansas, however, the fact is that most communities are going to be hard put in the years ahead to finance the expansion needed to keep up with growing school populations. The average cost of new school construction today is over \$1000 per pupil for elementary schools, and over \$1500 per pupil for secondary schools. With an ever-growing number of children entering elementary schools, and an ever-growing fraction of these who finish elementary school going on to high school, and remaining in high school until graduation, many communities are going to have a hard time financing enough construction to keep their school children warm and dry all day, let alone giving them club rooms and swimming pools.

Most local school districts finance the greater part of new schoolhouse construction by means of school bond issues, and, while some bond issues have been defeated this year, most of the building that will be

done in 1958 will be financed by bond issues that have already been approved. Some school people think the public debate about our so-called lavish school palaces may result in defeat for school bond issues that need to be approved to finance construction planned for 1959 and later years, but it seems unlikely that this will happen in many cases, and, even if it does happen, public debate about school buildings and school programs is essentially a wholesome thing from which schools are bound to benefit in the long run, because it will result in more people having a better understanding of school problems.

Increasingly in recent years, school districts have been dependent to some extent on state aid in financing plant construction and expansion. More than half the states make direct grants for construction, according to various state-school district formulas; some state assistance to school districts is in the form of loans. Usually, funds for state aid to local school districts depend on current appropriations by the legislatures and thus vary from period to period, but a few states are now earmarking state funds to provide continuing aid for long-range school construction programs.

#### PROSPECTS FOR COLLEGE BUILDING

As in the case of school construction generally, the outlook for construction of buildings for higher education is favorable for many years to come, because the population of 18-to-21-year-olds will continue to increase for a number of years, and also because the percentage of the college age population actually enrolled in colleges is also increasing rapidly. In 1940, only 15 per cent of the college-age population was enrolled in colleges; today, 32 per cent of the college-age population is attending college, and the percentage is expected to continue steadily upward in the years ahead. College enrollment this year totaled approximately 3,500,000; authorities estimate that the total enrollment will increase by at least a quarter of a million students each year, and that we shall have more than 6,000,000 students enrolled in our colleges and universities by 1968.

These students not only have to be taught, but a large fraction of them have to be housed as well. For the last five years, the construction of college residential facilities has been approximately one-third of the total of college and university construction for all purposes, including football stadiums and athletic fieldhouses. College and university construction this year, it is estimated, will total approximately \$550 million, and, again, estimates for 1958 indicate a moderate increase, in line with the anticipated increase in college population.

Of current college and university construction, approximately 60 per cent is for public institutions and 40 per cent for private institutions. As we look ahead to the need for constant expansion of college facilities

to keep abreast of the growing population and the constantly increasing percentage of high school graduates wanting to go on to college, it seems inevitable that the expansion will be increasingly in public institutions rather than private institutions, for two reasons. First, it is generally easier — or *apparently* easier, at any rate — to raise money by presenting a budget to the legislature than by presenting an appeal to a group of prospective donors, and, second, there are still some private institutions, but not as many public institutions, that cling to the quaint, old-fashioned notion that some intellectual qualifications or standards should be required of candidates seeking admission to college, and that the colleges are not automatically obligated to add a seat in the classroom and a bed in the dormitory for every candidate who appears in the admissions office.

One other phenomenon that should be noted in a report on the future of college building is the emergence of the junior college — usually as a 13th and 14th grade under the public school system, planned to meet the needs of those who wish to continue beyond high school but are unable to go on to the residential college or university. More popular in some areas than others — and notably a development of our larger cities — the junior college is unquestionably here to stay, but it seems likely that it will emerge slowly rather than rapidly, simply because the public school systems are so largely preoccupied with planning and building for expanding elementary and secondary school populations.



## PROSPECTS FOR HOSPITAL BUILDING

Of course, all these children who have been born and are growing to school and college age and have to be educated are also going to get sick from time to time, and so the medical facilities to meet their needs when they are sick and injured have to be provided, and the base line from which we estimate the need for hospital building in the future is the same as the base line for estimating educational needs — the growing population.

In the case of medical facilities, however, there are other factors besides population that have an important bearing on the need, a circumstance that is demonstrated by the fact that admissions to our hospitals have increased approximately 50 per cent in the last 15 years, a period during which our population has increased only 25 per cent.

For the last ten years, we have been adding to our hospital plant at the rate of approximately three-quarters of a billion dollars of new construction each year. It seems likely we will exceed that figure this year; estimates now indicate the 1957 total should reach \$850 to \$900 million of hospital construction, the largest of any of these years of intensive hospital building. Moreover, estimates for next year indicate hospital building will continue at these levels and may even show a modest increase in 1958.

With all this building, it seems reasonable to think that we may have reached the point where the need for hospital beds is largely supplied, or will soon be largely supplied, and thus the outlook for continued intensive building activity would be less favorable than it has been in the recent past.

Actually, this is a long way from being the case. There are some areas, to be sure, which are now well supplied with hospital beds and may be expected to curtail building expansion in the years just ahead. For the nation as a whole, however, the new hospital beds that have been furnished in the building program of the last ten years have barely kept pace with the demands of the growing population; there are still large areas with substantial bed deficits, and there are other areas in which large numbers of hospital beds still in use are in old, inefficient and unsafe structures. To meet these needs, hospital construction must be maintained at present levels for many years to come.

If we consider other factors than the population base, however, we may need to step up the rate of hospital expansion considerably beyond the present level. The utilization of hospital facilities is increasing more rapidly than the population, and while advances in medical science affecting the need for hospital facilities are of course unpredictable, there can be little question that the trend in developing medical technology over the years is always toward a greater and greater need for the staff and facilities available only in the hospital. You can't put a cobalt machine in a doctor's office.

Evidence of the trend of events in utilization of

hospital facilities is abundant. For example, the American Medical Association reported recently that the proportion of the medical care dollar spent for hospital services has doubled in the last 25 years — from 13.7 cents in 1929 to 28.5 cents in 1956. An even more significant figure, in terms of the interests of this particular group, is the difference in space requirements in the hospital today, compared with those of 20 years ago. When I first began to report hospital affairs, hospital architects, planners and consultants used to consider that the general hospital offering complete service should have 325 to 350 square feet per bed for all services. If a hospital had as much as 375 or 400 square feet per bed at that time it was regarded as extravagant. Today the United States Public Health Service standard for general hospitals calls for 550 to 650 square feet per bed, and many of the new hospitals have as much as 700 square feet per bed. The added space is used for all the facilities — such as postanesthetic and post-operative recovery rooms, and intensive care areas, and radioisotope laboratories, and high humidity treatment rooms, and inhalation laboratories, and cobalt machines, and blood banks, and many, many other services that didn't exist a few years ago, when the hospital got along nicely with 350 square feet per bed. It takes twice as much space today to provide hospital service for the same bed.

While surgery was the major part of hospital practice up until a few years ago and may still be considered the core of hospital practice, the fact is that the hospital has expanded far beyond the surgeon's horizons and is now the focal point for all the medical services of the community, including diagnostic services for outpatients as well as inpatients. In the general hospital today, as a matter of fact, from 20 to 30 per cent of all patients are not acutely ill and don't need to be in bed. This is a circumstance that foretells some changes in hospital design that are going to take place in the years ahead, and are already beginning to appear.

It is medically unnecessary and economically imprudent to keep a patient in bed all day on a unit designed to provide intensive nursing supervision, and give him three meals in bed, when he is in the hospital only for a diagnostic workup, needs only a minimum of nursing supervision, and is well able to walk to a cafeteria or dining room and get his own meals. So hospital planners are beginning to think about grouping hospital facilities according to the needs of patients, rather than by medical jurisdictions, and already some hospitals have been planned with special floors or units for ambulatory patients, and other floors or units for patients with ordinary nursing needs, and still other floors or units for patients with need for intensive nursing and medical supervision.

This kind of planning is going to be more and more evident as hospitals add to their facilities and undertake modernization programs in existing buildings. The

great expansion of hospital plant in the years ahead is going to come from additions to existing hospitals, rather than primarily in wholly new institutions, and the ingenuity of architects, consultants and builders is probably exercised as thoroughly by the task of adding new facilities to an old hospital building as it is in any other assignment in the whole construction industry.

As we look down the years, it seems likely that a lot of space in and around our existing hospitals is going to be needed for buildings and functions that our hospitals are just beginning to recognize as hospital functions — the provision of facilities and services for the aged, and also for the mentally ill, whose problems have generally been set aside for special institutions, and mostly for state supported institutions, up to this time.

While more than half of all the hospital beds in the United States are occupied by mental patients, nearly all these beds are either in huge state hospitals, where treatment is generally inadequate, or in small, private mental hospitals costing up to \$40 or \$50 a day, a figure few patients can afford. Only ten per cent of our general hospitals accept patients requiring psychiatric treatment, a circumstance that is about as illogical as it would be if we had hospitals caring for diseases and injuries of the soft tissues but not the bones. Physicians and hospital people, however, are beginning to recognize that the patient whose illness is mental or emotional in origin is as much their responsibility as one whose disease is organic, so we can expect to see the establishment of psychiatric buildings and psychiatric floors and psychiatric nursing units in general hospitals in increasing number. This is one of the directions that our hospital expansion is going to take in the years ahead.

Similarly, hospitals in their concern for the acutely ill and severely injured in past years have largely neglected the needs of the aged population. The aged constitute an ever-growing fraction of the whole population; there are now 1000 men and women reaching age 65 every day in the United States. Primarily, hospitals must be concerned with the needs of old people with chronic ailments requiring something more than home care but something less than the intensive nursing and medical supervision that is available in the general hospital.

While the Hill-Burton Act has provided substantial funds for such special hospital needs as these, and for regular hospital expansion, for the last ten years, and will continue to stimulate hospital construction, unquestionably, for some years to come, the fact is that the greater part of hospital construction funds right along has been coming from local, and not federal or state, resources, and the greater part of the local funds have come from private, and not tax, sources. Hospital fund-raising experience, for the most part,

has been favorable during the last year, and fund-raising efforts now in progress to finance expansion in 1958 and 1959 are also successful for the most part.

As in the case of private educational institutions, hospitals look more and more to corporate, as opposed to individual, contributions for a major share of their voluntary funds. It is encouraging to hospital people that business and industry generally recognize a responsibility for the provision of health facilities in their communities, and contribute substantially to such fund raising drives. The important part corporate contributions play in support of our medical institutions was recognized by President Eisenhower recently in his speech at a dinner honoring Alfred P. Sloan for his contributions to education and medicine. The President noted that Mr. Sloan was "among those pioneers who believed, far back, that the corporations of America derive from our colleges, our technical institutes, and our medical schools and hospitals a benefit which is ample to sustain — if not oblige — contributions toward their continued and effective service to the American people. . . . The American corporation is showing increasingly that it is a good citizen. Industry is accepting support of (education and medicine) as the normal responsibility of a successful business, because it senses a fundamental truth, too long veiled: That, by contributions to the strengthening of these resources, each giving corporation makes a sound investment in its own as well as in our nation's future."

Mortgage financing of capital expansion for hospitals is no longer a rarity, as it was until a few years ago. Hospitals have emerged in recent years as business institutions earning a large part of their own revenues, with an increasing share of earned income coming from hospitalization insurance agencies rather than individuals, and banks and insurance companies have recognized hospital building loans as good business. They have been more ready to make such loans than they were when hospitals were regarded as exclusively religious and charitable institutions whose incomes were uncertain and whose business methods were haphazard.

Like residential and industrial building, institutional construction in both the educational and medical fields is affected by the general economy, and estimates of anticipated school and hospital construction for the coming years might be substantially changed by the economic upheaval of war or depression. However, this is probably less true of institutional building in education and medicine than it is of most other programs in our economy. The basic importance of health and education in the survival and well being of our society is now generally recognized, and it is unlikely, even in times of distress, that we shall ever neglect to provide the facilities needed to maintain high standards of health for the entire population, and to give our children the kind of education we want them to have.

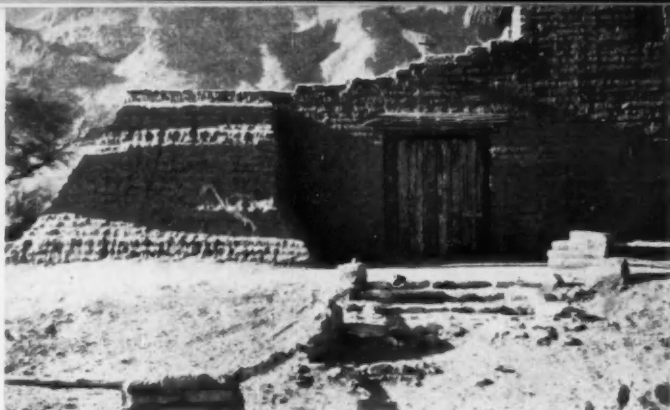


*The Jeronimus Church, Lisbon (G. E. Kidder Smith photo)*

**BUILDING TYPES STUDY 253**

®

**CHURCHES**



*From the materials of the site*

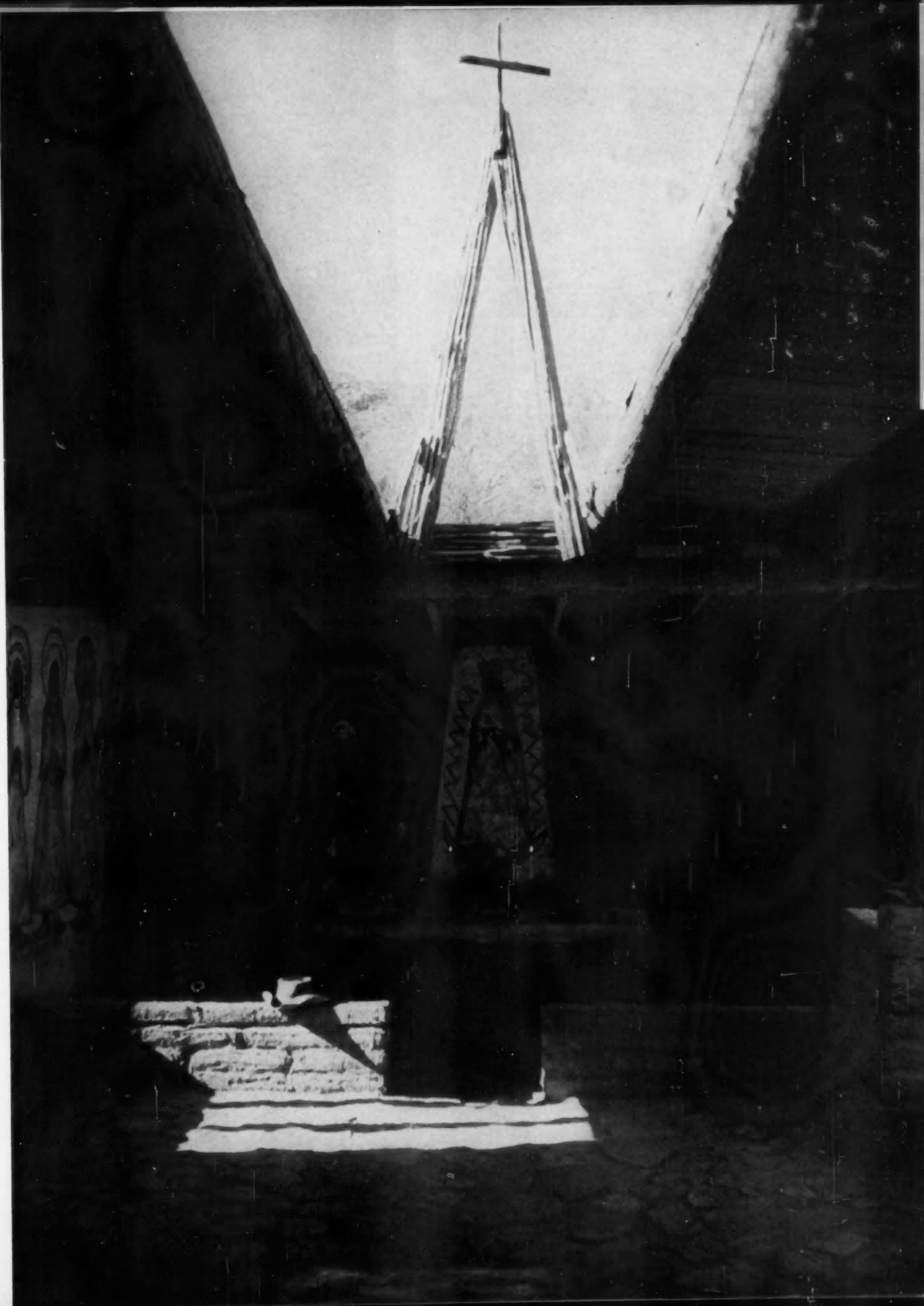
## THE POWER OF POSITIVE SPACE

IF THE STRONGEST development of form occurs in those building types which express the dominant concerns of a society, and if those types, in turn, influence all other building form, then it is not surprising that church building in America has not been, on the whole, rewarding. Only infrequently have we organized spaces for worship as powerful as the richly simple Mission of Guadalupe recently completed in Arizona by Indian worshippers under the direction of the painter Ettore de Grazia. On the contrary we seem to have been concerned with achieving a kind of Gracious Living in God's House. We have filled self-conscious volumes with planter boxes and finicking decorative gestures; conducted planning exercises and structural experiments; but have not made many positive spaces in which men can find — in the quality of the space itself — “something there that was not put there.”



*Meaningful elaboration of surface*





*Granite altar in a moving space*



The ingredients of a positive space are easier to identify than to successfully exploit: Shape responsive to purpose and to the means of its forming; Size related to man and to his aspirations as well; Surface which contains without dominating and elaborates without distracting; all brought together in Light to achieve a visual harmony whose unity escapes monotony through a variety which avoids chaos. Even more difficult to achieve is *character* which can come only through the ability of the whole to convey meaning. Just as with good men good spaces must stand for something. In this, where we have most often failed, we are beginning again to get instructive examples. Recent in a series of remarkable European works is the fisherman's chapel on the Riviera in which Jean Cocteau's frescoes and a few liturgical objects have rendered a powerful, palpable space.



*In simple lines a rich experience*

*The chapel at Villefranche-sur-Mer*



Mary Russell-Magnum Photo Inc.





*St. Thomas More Chapel, Portland (left);  
Zion Lutheran Church, Portland, Pietro Belluschi*

*Left, Ervin Jordan, right, K. E. Richardson*

In twentieth-century America outstanding examples are few and scattered, and the general level of work is commonplace. Perhaps only in the Pacific Northwest has there developed anything approaching a concentration of church building distinctly superior to the national average. There the work of Pietro Belluschi and Paul Thiry has set high standards for all who would design churches and an encouraging number of architects are endeavoring to meet those standards. In part the strength of the northwest prototypes derives from a simple directness which eschews the gimmick — structural or decorative. Their spaces are calm but intensely so. Shapes are simple but contoured and lighted so as to extend and enrich experience. Scale is man-and-God related. Surfaces are developed in a continuity possible only with a rigorously restricted palette.



*Church of Christ the King, Seattle, Paul Thiry*







*Simple materials plastically employed*

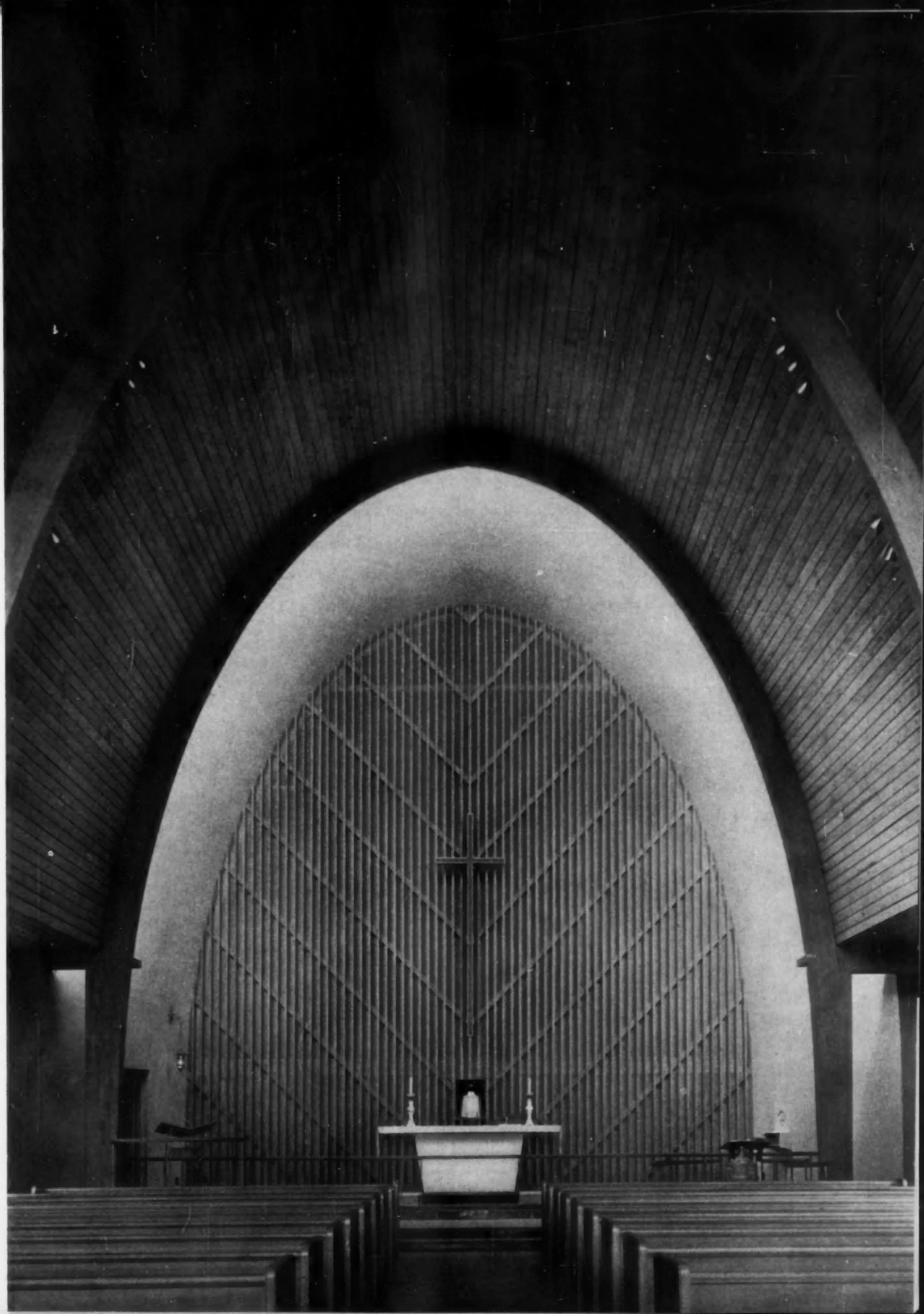
### **ST. ELIZABETH'S EPISCOPAL CHURCH, BURIEN, WASH.**

THE THREE LOW-COST churches presented here offer witness to the continuing high quality of church design in the far northwest and indicate something of the magnitude of the reach from architectural good looks to architectural personality and the further and harder reach from personality to character. If they do not ultimately accomplish their goals — the actual experience of their spaces must be prerequisite to that judgment — it can be observed that there is here evident that character-building concern for the unique qualities which inform these faiths.

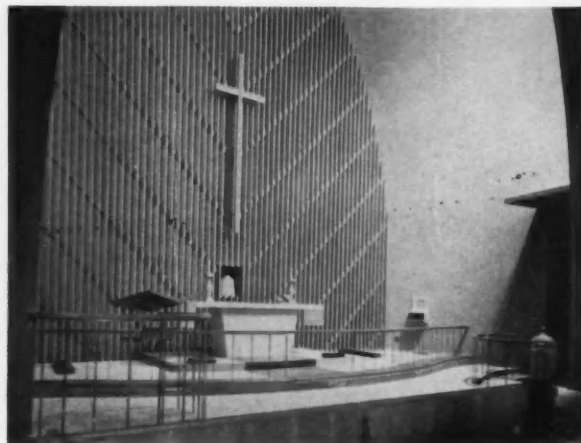
In St. Elizabeth's Architects Durham, Anderson & Freed have found in the union of a simple source of natural light and the glue-laminated framing arches an appealing sculptural shape when read from either inside or out. On a budget of \$100,000 and with the necessity of seating 400 all materials are simple and directly used.



*A space transformed through light*



*The restrained appointments of a unique liturgy*



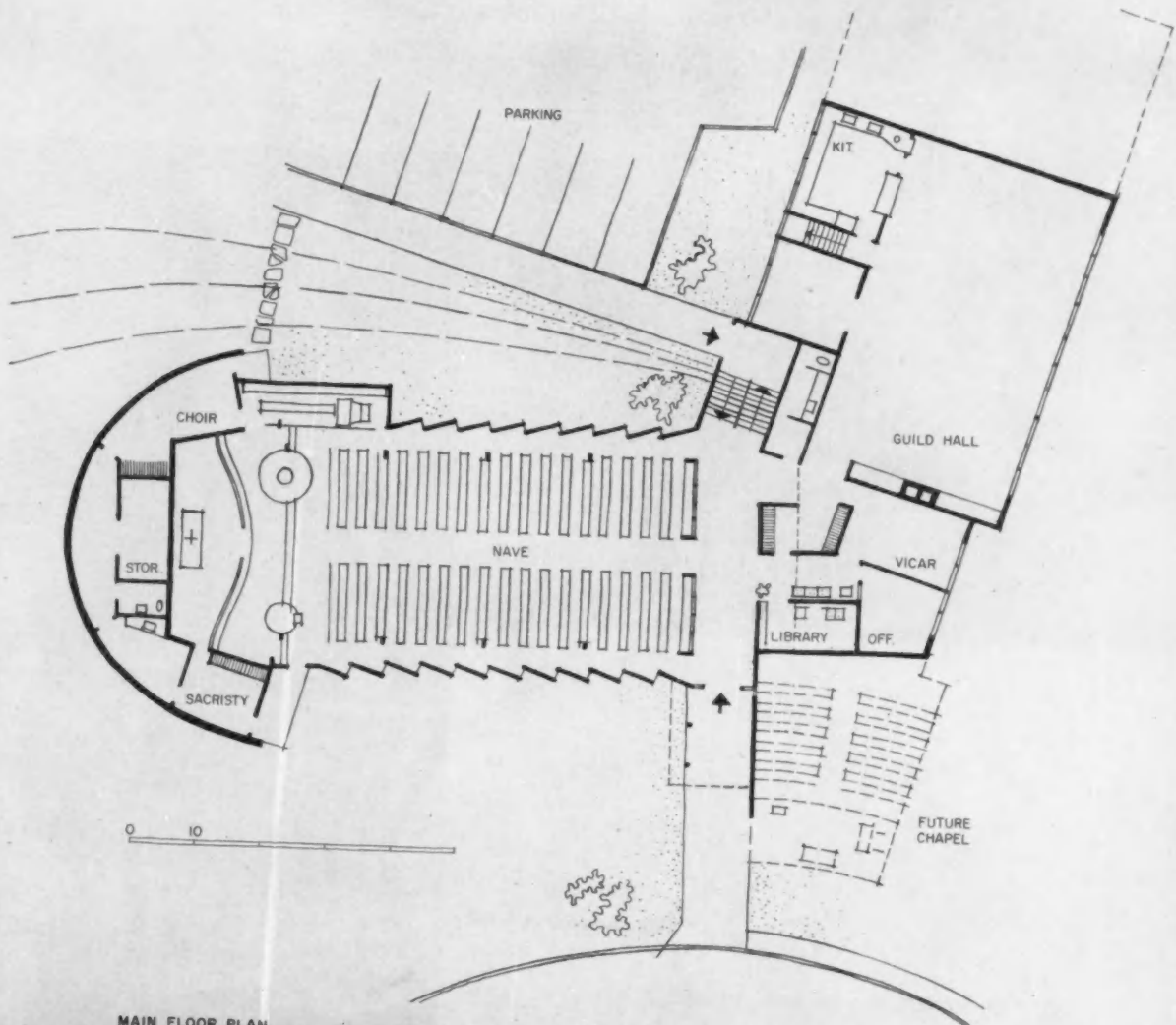
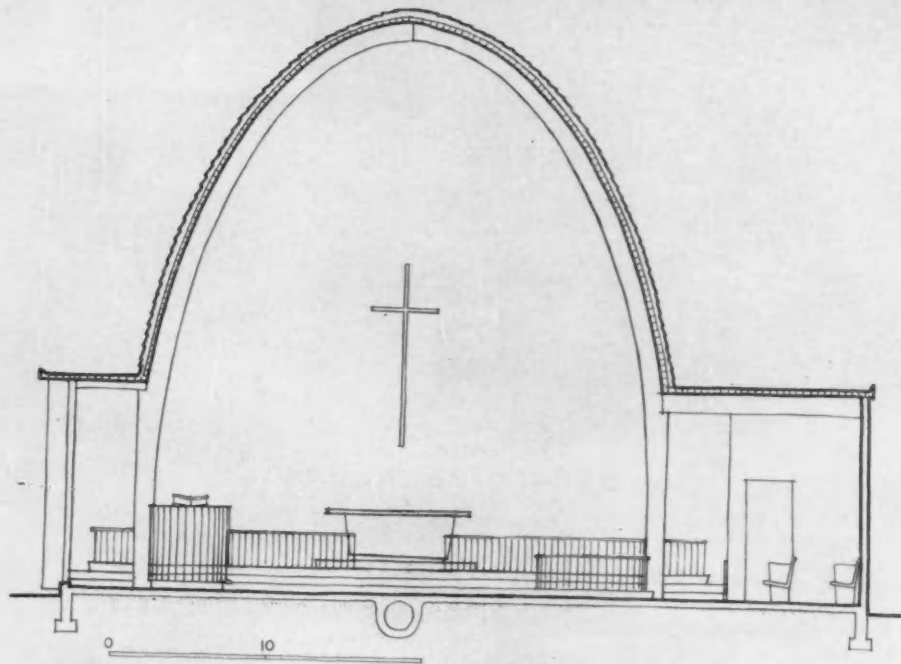
Art Hupp

Hand-split shakes cover the three-inch plank roof. The curved brick wall retains the grade at the chancel end and is the only major masonry element. Elsewhere — on exterior and interior — stained wood is used. A grayed beige and a middle value grayed blue are the principal nave colors. Altar and baptistry rails and the pulpit are in light wrought iron. Heating is warm air. Engineers: Stevenson & Rubens, Structural; Stern & Towne, Mechanical; B. A. Travis, Electrical; Color Consultant: Gladwyn Morrison.



*An architecture for night and day*





MAIN FLOOR PLAN



*First stage in a larger program*

# HOPE LUTHERAN CHURCH, TACOMA, WASH.

IN THE NAVE of this church — which will eventually become the parish hall of a larger plant — Architect Robert Billsbrough Price has achieved a splendidly simple and beautifully refined space. Glue-laminated beams and columns frame a room to seat 400. Tile-finished concrete floors (carpeted in the chancel), natural birch slats (on the upper side walls), white acoustical tile ceiling, and low side-aisle walls painted chalk pink are composed in very low key with the plum-colored brick of the chancel end wall. Because the narthex must double as overflow nave space and as a multi-purpose fellowship area it can be completely opened or closed to the nave



*Refinement and restraint*

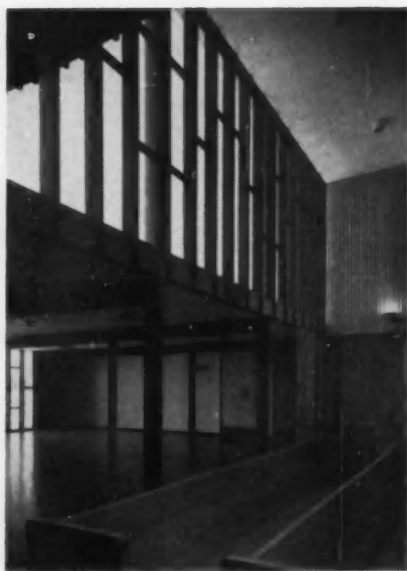


*A font of simple beauty*



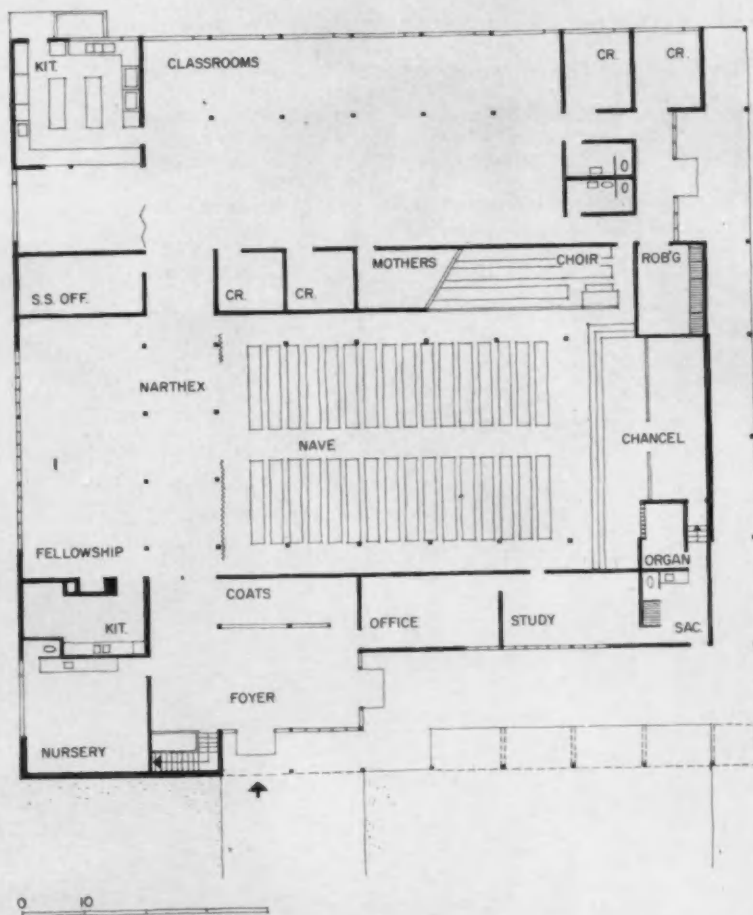
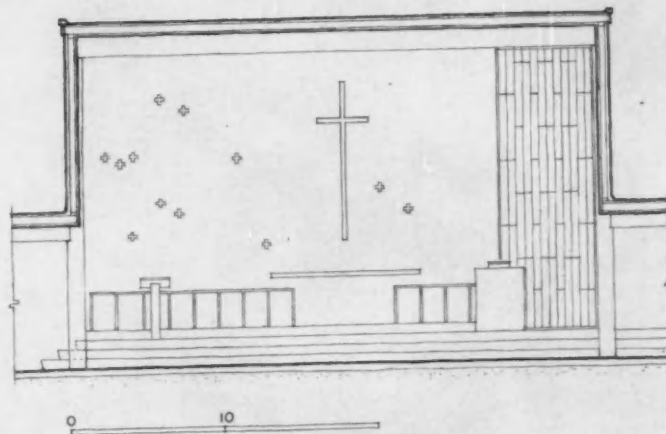
Deborah Messer

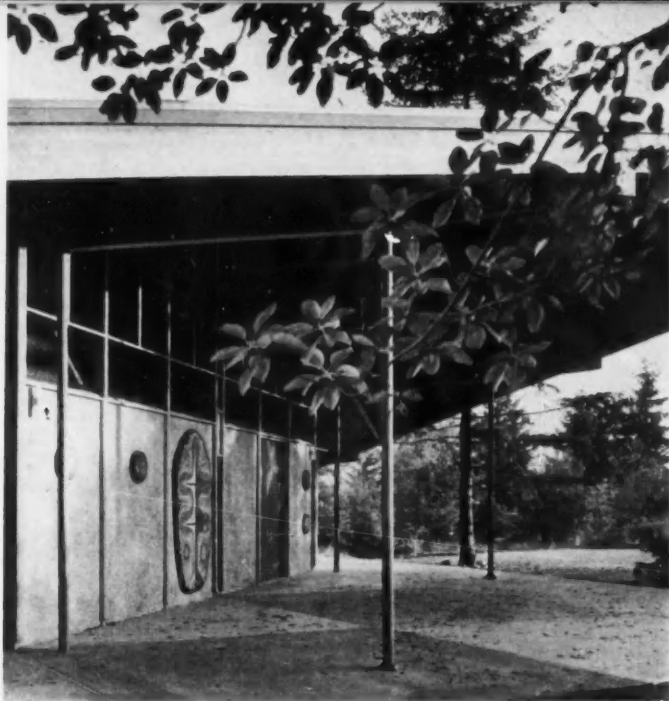
by means of wood folding partitions. The chancel is naturally lighted through an east window of French antique satined glass. Interior rooms around the nave are toplighted. Liturgical objects, rails and cross are extremely simple. Heating is warm air. Construction cost excluding fees was just under \$100,000. Electrical Engineer: Walter S. Gordon.



*Expansion and contraction*



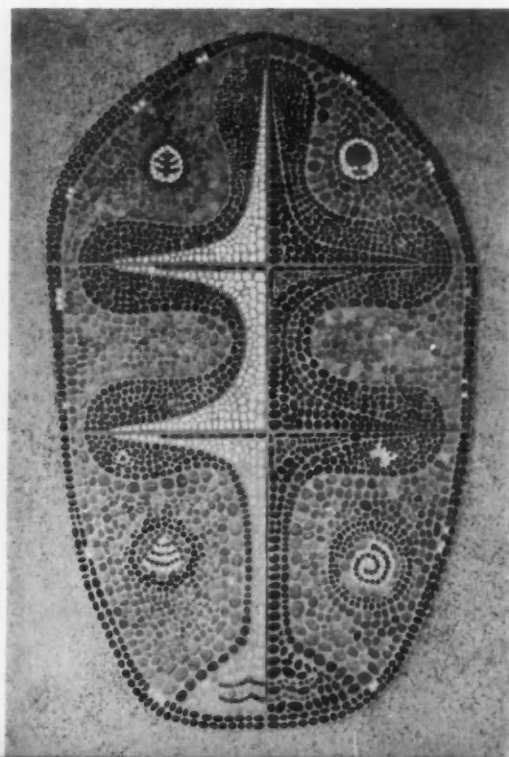




*Soaring canopy for the west front*

# **EAST SHORE UNITARIAN CHURCH, BELLEVUE, WASH.**

UNDER THE UNIFYING canopy of an elemental roof form Architects Bassetti & Morse have created a space of simple dignity and strong character. On a high site among tall firs this building is peculiarly responsive to its worship purposes, its environment and its budget: \$60,000. The ridge roof, framed as a diamond in plan, lifts high and extends far over the entrance at the west and the low-transmission glass wall at the east. Glue-laminated beams and girders are carried on wood or steel



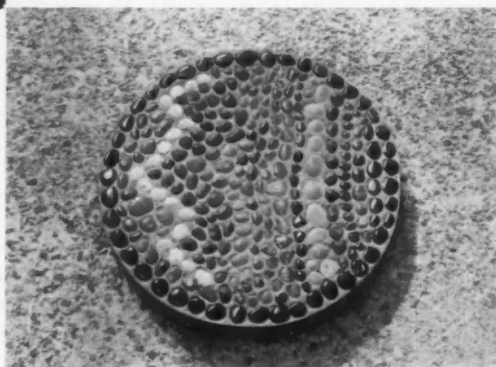
*Polished pebbles in a sculptor's hands*





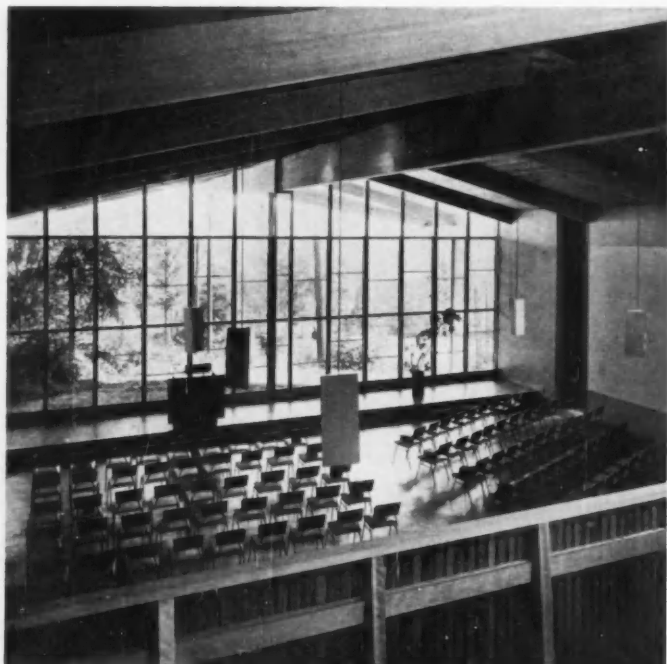
*A simple, soaring shape*

*A quality of simple richness*



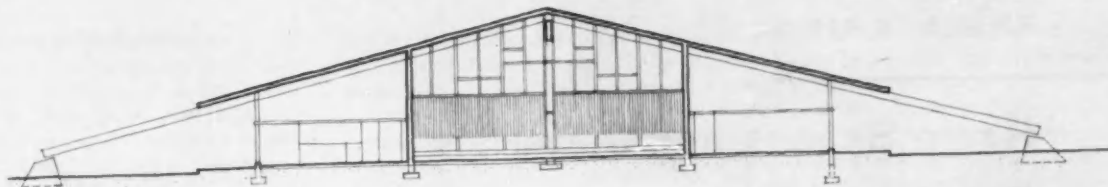
Art Hupp

posts. The built-up roof is topped with white marble chips. Tilt-up concrete wall panels are used on the west front and carry polished pebble mosaic decorations. Ceiling boards are stained warm gray and the assembly room side walls, presently painted a grayed pink, will eventually be covered with fabric in abstract design. Floor is concrete slab on grade. Assembly room will accommodate 300. Heating is warm air. Engineers: S. Ivarsson, Structural; Stern & Towne, Mechanical; B. A. Travis, Electrical; Sculptor: Jean Johanson.

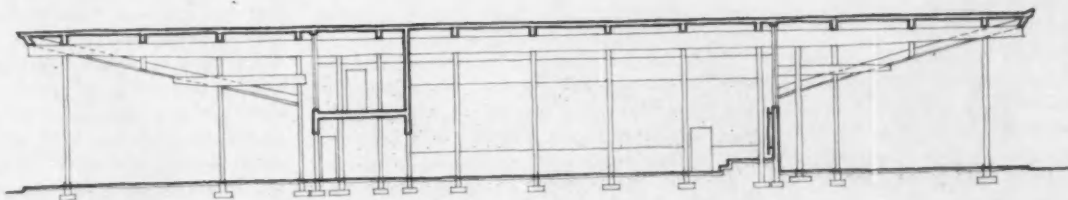


*The directness of the faith*

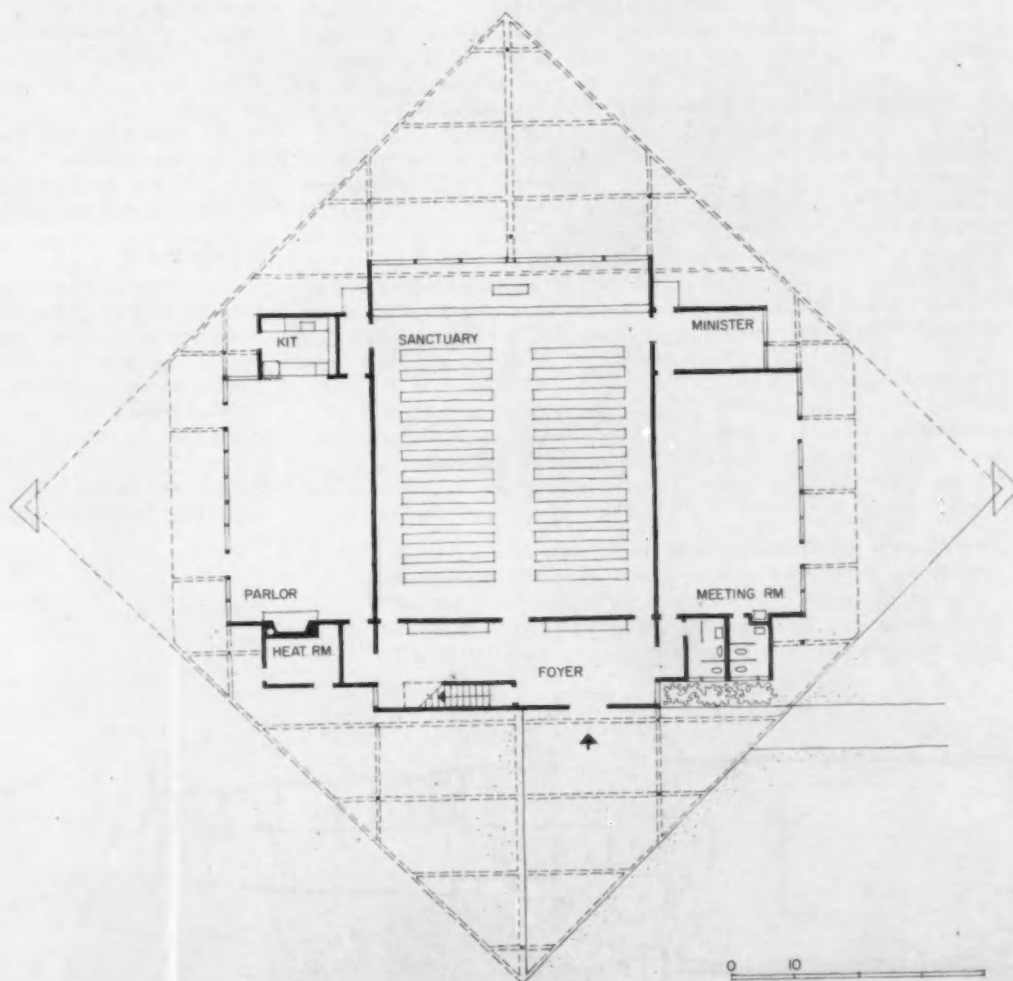




CROSS SECTION



CROSS SECTION



## Room Shapes and Materials Determine Church Acoustics

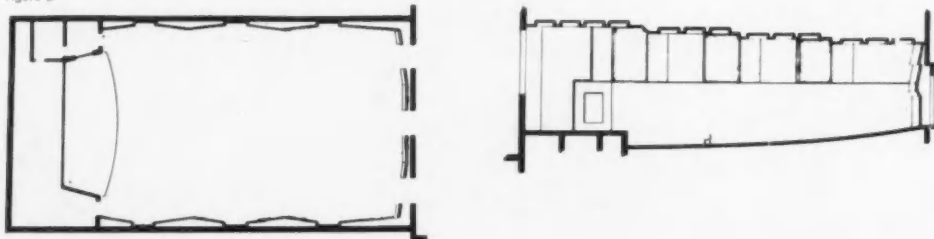
By R. N. LANE, Boner and Lane, Consultants in Acoustics, Austin, Texas



Figure 1

*More uniform distribution of sound results when there are many irregularities in the room such as exposed trusses, beams, coffered ceilings, etc. When this is not possible, a similar effect can be achieved by alternating hard and sound absorbent materials. In the drawings below walls are splayed to prevent flutter echoes; ceiling is coffered*

Figure 2



*Perhaps in no other building type except auditoriums (and churches are in a sense auditoriums) is the necessity so strong for considering room shapes, sizes and locations, and selection and location of finishing materials as they affect acoustic performance. Obviously consideration for acoustics must start at the inception of the design.*

### What Are Good Acoustics?

Quietness or peacefulness is probably the first and foremost requirement in the church sanctuary. Second, a uniform distribution of sound, both for speech and music, with adequate volume, should be provided in the auditorium. In addition, there should be no echoes or other discrete sources of sound which will be annoying to the listeners. Also, the reverberation time or acoustic response of the church should be chosen so that a successful compromise will be obtained between the best time for speech and the best time for music.

To exclude street and other exterior noises it may be necessary to provide the foyer of a church with self-closing doors and to have fixed windows, ventilation being provided mechanically. Such design will effectively exclude most outside traffic noise with the exception of low-flying airplanes. If the church is to be built near an airport, then special considerations will have to be taken.

### Interior Noises

The first interior noise source to consider is the ventilating system. The mechanical engineer should design a system such that the noise from the compressors and blowers is not transmitted into the church sanctuary. An easy way to be sure of this is to locate the equipment in a room which is not directly under or beside the church auditorium, to provide some type of sound absorbing plenums

or lined ducts from the air handling units into the auditorium, and to specify that the noise ratings on the output grilles in the auditorium should not exceed 20 to 25 db.

All the equipment in the machinery room should be mounted on vibration isolators, and it would be very desirable to have the ceiling and walls of this room acoustically absorptive to reduce the noise in the room as much as possible. Also, if the machinery room is adjacent to any meeting or fellowship room, the walls and ceiling above should be of such construction as to provide 50 to 55 db transmission loss. Several structures providing a 50 db transmission loss are shown in Figure 6. In some instances when the machinery room is isolated from all other important rooms, any type of wall structure may be used.

Another source of noise in churches is the downstairs social and recreation room — often located in the basement below the main auditorium. This noise problem may be eliminated by the use of a floor and ceiling construction between the sanctuary and downstairs recreation room providing a transmission loss of 55 db or more. A common floor and ceiling structure which will do this is shown in Figure 7. This simple construction consists of concrete on cellular metal flooring with a plaster ceiling furred down from that. Now, to control the noise inside the downstairs social and educational room, an acoustic tile or other acoustic absorbent material should be cemented to the suspended plaster ceiling.

Often adjacent to the education or social room there is a kitchen which can prove to be a very distracting noise source. This problem can be solved in the planning stage with provision for a sound barrier between the kitchen and serving aisle in addition to a partition

between the serving aisle and social hall. This combination will function as a sound lock by providing double walls. In addition, sound absorbing material application is a must for the ceiling of the kitchen.

### Sanctuary Design

First to be discussed is the reverberation response. While reverberation response is not the most important subject, it can be exactly controlled. (There is really no excuse for incorrect reverberation response in modern churches. Nevertheless, many churches are built each year with a reverberation response which is either far too long or too short.)

Figure 4 shows the presently recommended response time for large rooms, and it may be seen that the exact response is not critical within a few tenths of a second, but the response time does have to be maintained within the limits shown. For Protestant churches, because of the importance of speech, it is recommended that the design goal should be along the lines indicated for school auditoriums. Music also is an important part of the worship service, so the choice of reverberation time is a compromise with the emphasis shaded toward speech. Synagogues will be practically in the same range. Response for the Catholic church should be up near the top curve for best music performance. One thing that should be done to help musicians is to use hard reflective surfaces around and above the choir and pulpit. In this way the choir can sing in a live portion of the church and more easily blend their voices for the desired effect.

As is well known, the reverberation response of any space is controlled primarily by the amount and secondarily by the location of acoustically absorbent materials. These acoustically absorbent

materials include pew cushions, carpet, draperies, people, and special acoustically absorbent materials.

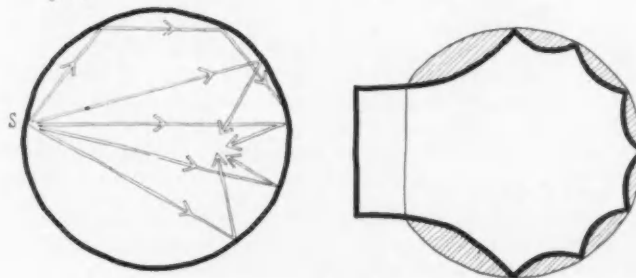
It should be apparent that the amount of acoustic tile to be used in a church is totally dependent on the rest of the finishes in the church and the determination of the total amount of tile required should be left until all other finishes are selected. The placement of the tile is also dependent on other factors, the most important of which is proper sound distribution throughout the seating areas.

The problem of achieving uniform sound distribution throughout the seating area is analogous but not identical to the problem of uniform light distribution. High frequency sound waves propagate in straight lines like light, but low and middle frequency sound waves propagate differently, bending around objects and starting new trains of waves in different directions from each irregularity or obstacle in their path. Because of this, the most uniform sound coverage results when many irregularities are introduced to the room surfaces such as deep windows, exposed columns, coffered ceilings, exposed trusses, etc. If it is not possible to provide wall and ceiling irregularities and still meet the esthetic and financial requirements of the building, it is possible to produce these irregularities by alternating acoustically absorbent patches on the surface with panels of hard surface materials. This discontinuity in material bends and disrupts the propagation of sound producing beneficial scattering of the sound wave trains.

The shape of the church building is also important in the distribution of sound waves, and some shapes are to be avoided if at all possible. First, don't design a round church, see Figure 3. Circular or elliptical floor plans always

*Circular plans cause many sound distribution problems. First, reflections result in focusing effects. Sound creeps around walls as in a "whispering gallery." Echoes occur due to delayed sound. If a circular plan must be used, walls should be broken into convex shape*

Figure 3



## CHURCH ACOUSTICS

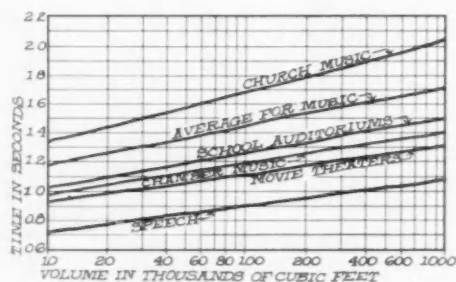


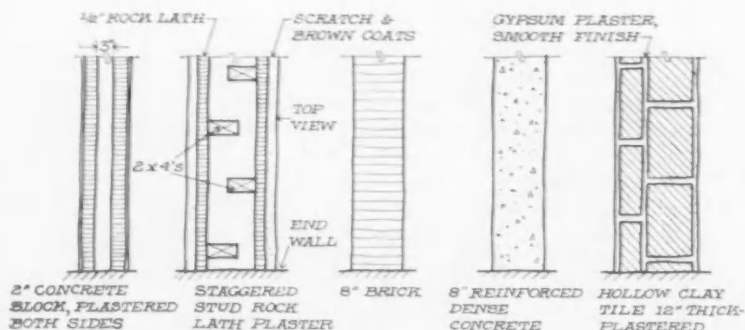
Figure 4

Reverberation times for churches should lie somewhere between the line for school auditoriums and the top line where music is the most important aspect of the service



Figure 5

Mechanical rooms should be moved away from sanctuary if possible to reduce the need for sound isolation in the form of special walls. Ducts may need sound insulation



### 50 db Sound Reduction Walls

If a machinery room must be situated next to a meeting room or fellowship hall, then a sound isolating wall providing at least 50 db loss should be used. This can be achieved through air spaces, weight and discontinuity

give rise to focusing effects, non-uniform distribution of sound, sound creeping effects and echoes. In the circular plan, sound originating at S and directed at nearby grazing incidence to the walls tends to creep along the side of the wall as in a whispering gallery. One can be sure that where sound foci exist, it means that other areas of the room are lacking in sound, and it is impossible to crown everyone into the sound foci. Focusing is also illustrated by the sound rays striking the rear wall and all being reflected to one spot.

If in spite of these difficulties it is decided to construct a round church, the acoustical conditions may be greatly improved by the addition of convex diffusing surfaces as shown in the plan on the right of Figure 3.

Domed ceilings produce similar bad effects, and particularly bad results occur when the radius of curvature of the dome has its center on the floor.

Another form of church guaranteed to lead to acoustic problems is the cathedral style church with long thin nave, or auditorium, and with extremely high ceiling. In this type of church the walls are usually parallel, and one obtains severe flutter echoes back and between each wall. The architecture or esthetics of the building usually prevent the use of any acoustically absorbing material on these side walls and therefore the reverberation response is always too long. Speech is usually barely understandable in these buildings but the choir and organist enjoy themselves.

Another type of building to be avoided is the very low ceiling, long church. This church is almost always too dead and the choir and congregation cannot get together for singing or speech responses.

The final important aspect of sound distribution is the suppression of echoes

of all types. An echo is a sound wave or pulse which has been reflected from some surface with sufficient magnitude and time delay to be perceived by the listener as a sound different from the one directly transmitted. For example, a person seated in the third pew from the front in a fairly large church may hear the direct sound and then one-tenth of a second later may hear this same sound reflected from an untreated rear wall or balcony face. Any room over one hundred feet in length with a long, flat reflective rear wall has a potential echo. These surfaces should either be splayed or tilted to prevent the formation of the echo or should be covered with acoustically absorbing material to prevent the reflection of any appreciable amount of energy. If none of the above treatments appear to be practical, the rear wall should be broken with doors, or other offsets. Concave rear walls and balcony fronts are to be entirely avoided because this type of surface focuses all the sound hitting it into an echo. On the other hand, convex surfaces are to be recommended when they are practical.

Flutter echoes are a sound wave train made up of the initial pulse followed by a series of pulses decaying in amplitude and following each other in rapid succession. If the pulses are evenly spaced in time, such a flutter echo is called a musical echo. This condition often occurs between opposite and parallel smooth hard sound reflecting surfaces. Flutter echoes may be prevented by splaying the walls, a minimum of one foot in 10, or by using irregular panels of absorbing material on the walls.

Multiple or succession of sound pulses are another serious echo problem. These echoes are generally caused in churches where a large number of concave surfaces are used over the chancel area combined with a domed auditorium.



Figure 7

### 50-55 db Sound Reduction Floor

When the machinery room is below the sanctuary, the floor above should have a loss of 50-55 db. Characteristics of one are above



# High Frequency Lighting

BY R. D. BURNHAM

R. D. Burnham and Associates  
Consulting Engineers, Lorain, Ohio

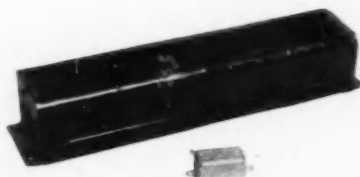


Figure 1

*Conventional two-lamp brick type ballast looms huge beside small single lamp high frequency capacitor. Fixture weights can be cut by half at high frequency*

*Current-voltage traces are given for incandescent (top) and fluorescent (bottom) lamps. Incandescent lamp at 25 cycles is heating up and cooling off. At 60 cycles it stays at even brightness. Fluorescent lamp at 60 cycles deionizes; at 840 cycles it stays charged and efficiency increases*

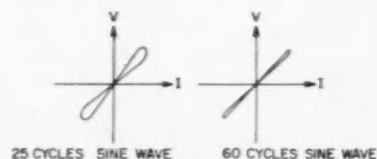
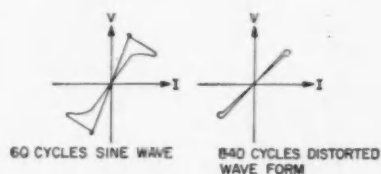


Figure 2



FLUORESCENT LAMPS CAN PRODUCE more light and last longer when operated at frequencies considerably above 60 cycles. About 40 test installations, coupled with recent new developments, indicate a better performing lighting system can be installed for an initial cost about the same as, or slightly less than conventional systems. Also the cost of operation can be reduced. A real advantage of high frequency is that fluorescent fixtures can be made smaller and weigh considerably less since ballasts are reduced to "peanut" size.

Some of the problems in this new method include the necessity of providing frequency convertors, because power is distributed normally at 60 cycles. And since increased efficiency is achieved by operating lamps at higher brightnesses, fixtures with good brightness control are required, in some cases units of special design.

In any case, it seems likely that high frequency lighting will find widespread use in commercial and industrial areas, as well as in specialized applications such as radio and television studios, or mercury vapor and fluorescent street lighting.

## History

Probably the first suggestion that gaseous tubes activated by high frequency energy could be used for general lighting occurred over 60 years ago. In May 1891, Nikola Tesla gave a historic lecture at Columbia University, "Experiments with Alternate Currents of Very High Frequency and Their Application to Methods of Artificial Illumination."

Tesla became one of the greatest electrical inventors of all times, making basic discoveries in radio, electrotherapeutics, high-frequency induction heating, and gaseous tube and fluorescent lighting. He also invented the polyphase induction motor and helped George Westinghouse design the first 60 cycle polyphase electrical generating stations.

The selection of 60 cycle current in 1890 was based largely on the fact that the motors operated well at this frequency and current of this frequency could be transformed and transmitted over long distances which was not possible with direct current. But by far the major electrical load at this time was lighting. Frequencies much below 60 cycles caused the light from the filament lamps to flicker.

The first commercial filament lamp

was put into use in 1881. These lamps for the most part were powered with Edison's low voltage direct current.

## Why High Frequency?

In 1938 Tesla's fluorescent lamp came into commercial use. Unlike the filament lamp which acts to limit the current as it warms up, the fluorescent lamp rapidly decreases its resistance after starting and soon would destroy itself if some current limiting element were not used in conjunction with it. The current limiting element can be a resistance, capacitance or an inductance. At 60 cycles both the resistor and capacitor circuits result in a low overall efficiency in the transformation of electrical energy into light energy. For this reason, the inductance is chosen as the current limiting device and takes the form of the brick type fluorescent ballast associated with fluorescent lighting.

The fluorescent lamp, unlike the filament lamp, operates much better at frequencies considerably higher than 60 cycles. In Figure 2 the dynamic curve is shown for a filament lamp at 25 cycles and 60 cycles. At 25 cycles the loop opens indicating the filament is cooling off and reheating each cycle. Figure 2 also shows a curve for a fluorescent lamp at 60 cycles and 840 cycles. The open loop in the curve at 60 cycles indicates that the lamp cathodes are deionizing between cycles. At 840 cycles the ion cloud is maintained; this results in an increased lamp efficiency or more light for the same wattage. This comes from a reduction in the amount of unused power turned into heat at the lamp cathodes. For a 4-ft fluorescent lamp, this efficiency gain may be from three to 25 per cent depending on the frequency, wave shape and lamp circuit.

The ion cloud tends to be maintained over the complete cycle at higher frequencies and acts as a buffer for the cathode against the rapidly reversing electrical arc. This prolongs lamp life. How great an increase has not been determined accurately. Accelerated life tests indicate the increase may be between 10 and 20 per cent.

At higher frequencies it becomes practical to limit lamp current with a capacitor. At 60 cycles a capacitor in the line with a fluorescent lamp causes the current to peak due to the relatively slow charging and discharging of the capacitor. The peaked current wave limits the amount of power to the lamp and causes it to operate inefficiently. At higher frequencies the cycle reverses

more rapidly and the peaked current wave form vanishes. At frequencies above 300 cycles it becomes practical to use a capacitor. It is a much more favorable element to use as a ballast than an inductance. The power consumed is considerably less with the capacitor. It is smaller in size, lower in cost and develops little if any noise.

In the conventional fluorescent ballast the voltage applied to the lamp for starting is from two to six times the line voltage. In today's high frequency, a voltage of 400 or 600 volts is developed by the frequency conversion equipment and distributed to the lighting load. 400 volts will strike the arc for 4-ft lamps and 600 volts will start 8-ft lamps and lamps of shorter length. Because of the instant starting feature only instant starting lamps should be used such as the 8, 6 and 4 foot slimline lamps.

The 60 cycle ballast is usually designed to pass about 430 milliamperes through the lamps. The value of the current limiting capacitor for high frequency determines the lamp current. This offers a wide range of selection of lamp current ranging from 100 to 700 milliamperes for standard lamps. The light output of the lamp will vary accordingly. This selectivity makes it possible to group the lamps or luminaires in a desirable arrangement and then choose the proper value capacitor to give the desired illumination.

The latest tests indicate that the light output of 4-ft lamps may be increased up to 50 per cent and still operate as efficiently as the same lamps operated on the conventional 60 cycle system. To state this another way, two lamps on high frequency would give the same light and have the same wattage as three on 60 cycles, under these circuit conditions. This reflects a savings in the installed cost of lamps and lighting fixtures. Fewer units require maintenance.

The higher lamp brightness requires a well designed luminaire with good brightness control. Specially designed lighting equipment has been used in some cases. It is possible to design smaller and more efficient lighting fixtures since the larger section electrical channel required for the brick type ballast can be reduced if not eliminated completely in preference to the pigmy size capacitor which can be tucked into the socket assembly. Fixture weight is usually cut in half with the removal of

the 60 cycle brick type ballast even with present lighting equipment.

### Typical Installations

One of the first high frequency installations was at the Plant Industry Station of the U. S. Department of Agriculture, Beltsville, Md. for plant growing under controlled levels of electrical lighting. At first in these experiments, 1600 foot-candles at 60 cycles were employed and such high illumination level required the large conventional ballasts to be mounted remotely. Then when high frequency was installed, small 3 oz capacitors were used in the fixtures of 8-ft T-8 lamps operating at a maximum of 550 ma producing 2400 foot-candles at the growing area below.

A special 5 kw harmonic frequency multiplier was used for frequency conversion. This multiplier was developed by the General Electric Company and has a 360 cycle square wave output. This static type unit has low maintenance and controls are provided which allows a variation in illumination from 1600 to 2100 foot-candles. The cost of this unit is comparatively high and its capacity fairly low so its use has been limited primarily to special constant load applications.

With larger electrical loads the motor generator has been selected. The first larger installation of this type was at the Union College Field House, Schenectady, N. Y. Frequency was changed by a 208/120 volt 3 phase motor and a 400 cycle 3 phase generator. 490 8-ft slimline lamps were operated from two 30 kw generators. A split phase lamp circuit was used in this system to maintain nearly unity power factor. Both a capacitor and a small inductance were used as shown in Figure 4. The savings in initial cost was reported to be 10 per cent less than the filament and mercury vapor lighting intended.

The first commercial installation of its type was installed in late 1955 in the new office building of the Wakefield Company. Like the Union College Field House the power for lighting was supplied by a 30 kva generator. The generator was a different type and developed a frequency of 840 cycles. The permanent magnet rotor of the generator is mounted directly to the shaft of the standard 440 volt three phase induction drive motor. The generator stator is mounted directly to the motor by means of a special bell end. The permanent magnet feature reduces maintenance

since there are no voltage regulators, exciters or brushes to require service. 400 volts were selected since the number 4-ft lamps were used. The lamp circuit was as shown in Figure 6. Capacitors are used in series with each lamp and power factor correction is achieved about every 25 lamps with an air core reactor across the line. Lamps were operated at currents of 430 and 600 ma, depending upon the illumination desired for the area. The 580 lamps have operated about 6800 hours during the last year and one-half. No lamps have as yet burned out. Overall efficiency was measured to be 13 per cent greater than the 60 cycle systems which have been used.

Since most of the auxiliary power loss of the lighting system is removed from the occupied area, the heat developed by the lighting system is reduced from 15 to 25 per cent. Thus the capacity of air conditioning can often be reduced.

The three story windowless Federal Reserve Bank Building in Houston, Texas is now being completed, using a similar system. The architects for this building are Goleman and Rolfe of Houston. Their engineer, Dana Price, was one of the first to recognize the advantages of high frequency lighting for larger buildings.

All of the general lighting is supplied from seven 30 kva, 840 cycle 600 volt permanent magnet generators located in the equipment room. Several thousand 8 ft slimline lamps at 600 ma are used; however, 4-ft and 6-ft slimline lamps are used as well as the 2-ft and 5-ft bi-pin fluorescent lamps. Even a few filament lamps are used on high frequency for exit signs and in storage areas.

Two engineering advances are used in this installation. One is in the design of the high frequency control center. The lighting power center is fully automatic, paralleling the required number of generators as the lighting load varies. Ordinarily this takes rather complex equipment. Georator Corporation, the builders of this equipment, have so designed and matched these generators that they can be connected directly to the bus and synchronization is automatic.

The lamp circuit was modified to a two lamp series circuit as shown in Figure 7. This circuit is similar in operation to the series sequence start circuit used in ballasts. One lamp starts and then the other. The two lamps then operate in series.

One of the major problems has been low power factor; a capacitor in series with each lamp has a leading power factor of about 25 per cent. Such a high reactive current makes it necessary to use about the same kva of inductive reactance as the kva of the lighting load in order to correct the power factor. The series circuit has a leading power factor of about 50 per cent, cutting the required power factor correction in half.

The series circuit uses only one capacitor "can" for two lamps and since the power factor correction is reduced the auxiliary losses are again cut in half. The capacitor and coil losses for such a circuit would be 4 watts as compared to about 28 watts for a two 8-ft lamp ballast. It is this difference which sometimes affects the capacity of the air conditioning.

### New Developments

After the development of the series circuit about a year ago, it was believed that still further improvements could be made. Ideally the power factor correction coils and inductive ballasts should be eliminated altogether. The new circuit should be able to use any fluorescent lamp and particularly the 4-ft rapid start and the high output rapid start lamps. The improved system should have a three phase distribution rather than the three single phase system. This would cut the number of feeder wires in half, and finally, the distribution voltage should be less than 280 volts so standard single pole switches and circuit breakers could be used rather than the more costly 600 two-pole variety.

These requirements are now satisfied by a new single circuit design which can be applied to any of the fluorescent lamps.

The installation of this system is identical to a standard three phase 120/208 system. The only difference is that the lighting panels are fed from a frequency converter and the circuit within the lighting fixture is modified.

The key to the widespread use of high frequency lighting is an efficient inexpensive means of frequency conversion. A new type frequency-changer has been developed which is smaller, has a higher efficiency and lower maintenance than the presently used units. The construction is similar to that of a transformer and has no moving parts. Operation of this static multiplier relies on a rotating magnetic field while both the primary and secondary windings are stationary.



Installation at Dept. of Agriculture test station, Beltsville, Md. provides 2400 ft-candles 360 cycles. Frequency conversion supplied by magnetic multiplier, left

Figure 3

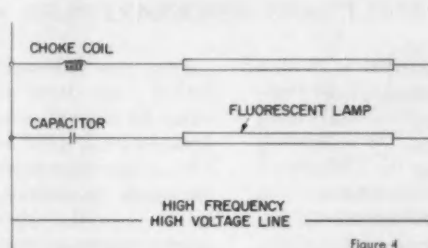
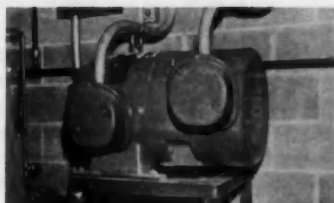


Figure 4

Split-phase ballasting for unity power factor



840 cycle permanent magnet generator, right, is driven by standard induction motor, left. 30 kva size, 18 by 30 in.

Figure 5

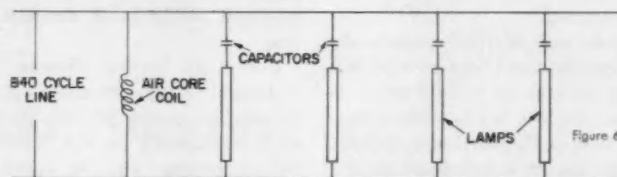
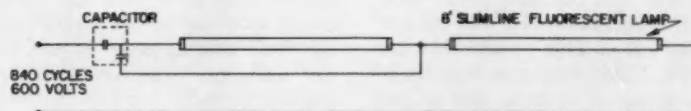


Figure 6

Capacitors in series with lamps. Reactors across line for power factor correction

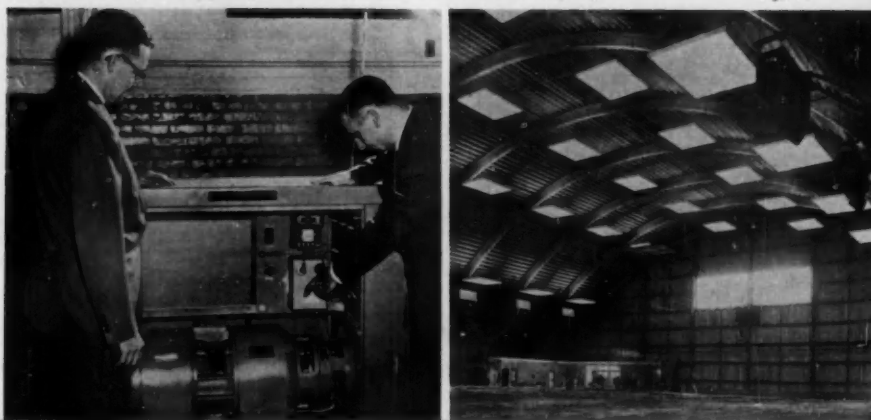


Series circuit reduces number of capacitors and power factor correction units

Figure 7

Union College Field House has two 30 kva, 400 cycle generators to operate 490, 8-ft slimline lamps, providing 45 ft-candles in service. Fixtures are 8 ft sq

Figure 8



## TECHNICAL ROUNDUP

News • Research • Tests • Reviews

### BRICK HOUSE BUILT SANS BRICKLAYERS

PLANT-PREFABRICATED BRICK PANELS developed by the Structural Clay Products Research Foundation recently made a successful debut in an 1800 square foot ranch style home near the foundation's laboratories in Geneva, Illinois. Construction of the house marked the first full scale test of the "SCR building panel" — and a significant step forward in the structural clay products industry's efforts to adopt brick's time-honored qualities of strength, economy and weather-resistance to modern building techniques.

The 1200 square feet of load-bearing brick panels used for the Geneva house were erected in eight and one-half hours by a construction crew of five men, resulting in a total site erection cost of 30 cents per square foot of wall area, including mortaring.

The panels, each of which consists of 36 special norman-face bricks set in stack bond, were made at the SCPRF laboratory by placing the bricks, reinforced with steel bars and squared with drilled metal corner braces, in forms and bonding them with quick-drying mortar forced into the frame. The finished panels — each one foot (one brick) wide, eight feet (36 bricks) high and two and one-half inches thick — come from the frames complete with angle bolt attachments at top and bottom, and beveled edges along the sides.

They were delivered to the site on a flatbed truck from which they were raised by a small hand-cranked crane equipped with a vacuum device. Two men operated the hoist, a third guided the panels into position, and two others bolted them through a flange on the panel to horizontal steel angles attached to the sills at top and bottom of the walls. To hold the panels firmly in place, only a single bolt was required at each end.

When all the units had been placed, the roof trusses were immediately swung into position and the finishing work was begun. The interior vertical joints between panels were power mortared, after which the wall was furred and finished in the conventional way. The beveled joints on the exterior were similarly mortared as the house neared completion.

Robert B. Taylor, director of the Structural Clay Products Research Foundation, points out that the panels, while loadbearing, are also practical for non-loadbearing walls in curtain wall type construction. He has also indicated that the foundation is continuing its experimental work with the masonry panels, and that further applications of the "SCR building panel" in both single and multistory construction are being planned for 1958.

(More Roundup on page 208)



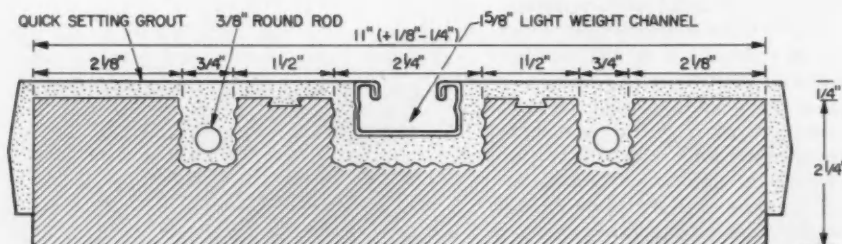
"SCR building panels," each made up of thirty-six norman-face brick set in stacked bond, are vacuum-lifted into place



A single bolt at top and bottom of each panel secures them to horizontal steel angles attached to the sills



The brickwork completed — by five men in eight and a half hours, roof trusses are installed and finishing work begun

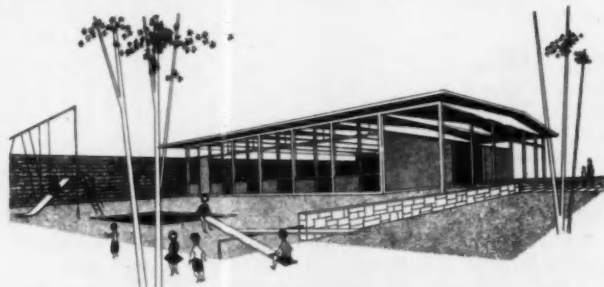


Section through panel shows placement of reinforcing, beveled edges. Mortar is forced into forms after brick has been placed



## PRODUCT REPORTS

Materials • Equipment • Furnishings • Services



### SLOPE BEAM SYSTEM CUTS COST OF LOW PROFILE ROOFS

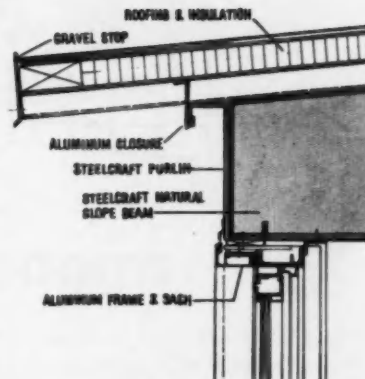
A new framing system, which includes steel beams and purlins for use with a wide variety of roof decks, promises to reduce labor and material costs for flat and low-profile roofs by as much as 30 per cent. Principal structural element of the system, the slope beam itself, is a welded assembly of structural steel plates, tapered on one side and flat on the other.

Its primary advantage over standard beams lies in its weight. The slope beam uses less steel than rolled sections for equivalent loads, is lighter — and lower in cost. Because most steel erection is based on tonnage, this saving is also reflected in construction costs. Additional savings result from the low heel which reduces wall heights; decreased dead load which reduces the size of columns and foundations; and complete shop

fabrication which reduces work in the field.

Because the beams are custom-made, the usual wait for delivery of structural steel sections is eliminated, and lengths are not limited to a series of standards. Beams are available for spans from 25 to 60 ft, but can be made in any length — even to the fraction of an inch — without increased cost. The purlins come in sizes from 8 to 10 in. deep.

For greater flexibility, the system can also be modified to meet special requirements for multiple spans, inverted positioning, longitudinal tilting, overhangs or special loadings; as well as for crawl holes for ceilings and openings for ducts and conduit. *Steelcraft Manufacturing Company, 9017 Blue Ash Rd., Cincinnati 42, Ohio*

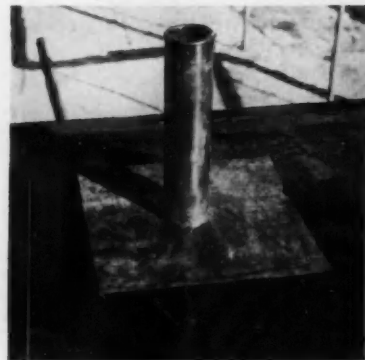


### PLASTIC FLASHING IS EFFECTIVE, EASILY FABRICATED

*Saraloy 400*, a new plastic flashing material now being marketed after eight years of extensive use tests, is expected to solve many of the difficult flashing problems which have heretofore plagued the construction industry. The black thermoplastic sheet of vinylidene chloride copolymer is said to be more effective

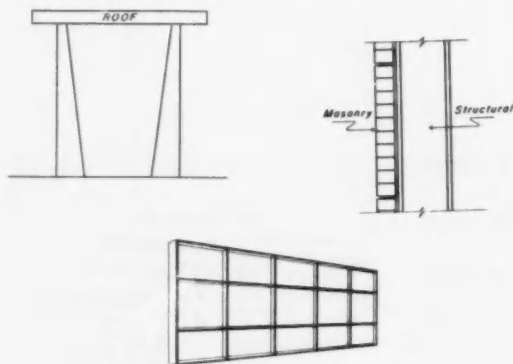
against water penetration than any other available material. In addition, it requires no shop fabrication, and can be cut to size on the job and applied to almost any construction shape and material — including corrugated roofing and siding, vent stacks and masonry chimneys. Permanent joints are formed by

simply solvent-welding the flashing to itself. The elasticity of the material prevents breakage of joints or loss of bond due to building expansion and contraction, and causes the sheet to form a seal around nail holes driven through it. *The Dow Chemical Company, Midland, Mich. (More Products on page 216)*



## LITERATURE

Catalogs • Brochures • Booklets



### INSULATED PORCELAIN ENAMEL PANELS

The "twice-told tale" of the curtain wall is told once again in this 20-page manual which traces the evolution of curtain wall construction from the load-bearing masonry wall through the masonry curtain suspended on a steel frame to today's grid frames with insulated metal panels. This review of the development of curtain walls in general is followed by a discussion of the advantages and types of modern metal panel construction, and detailed coverage of the design, characteristics and application of two types of mechanically-assembled porcelain enamel panels. Simplified drawings and sections, and photographs of typical installations are used throughout, and the presentation concludes with complete specifications for the U-16 and U-20 insulated wall panels. *The Erie Enameling Company, Erie, Pa.\**

### Commercial Standards for Steel Doors

Three new commercial standards provide minimum requirements for steel doors. Standard CS211-57 covers flush-type interior steel doors and frames; CS212-57 covers steel sliding closet door and frame units; and CS213-57 covers steel knockdown sliding closet door units for wood frame installation. 10¢ ea. *Supt. of Documents, Govt. Printing Office, Washington 25, D. C.*

### Pullout Service Equipment

Describes and illustrates new Add-On 100 amp pullout service equipment. 8 pp. *Arrow-Hart & Hegeman Electric Co., 103 Hawthorn St., Hartford 6, Conn.*

### Moving Sidewalk Handbook

Bulletin 457 features comprehensive technical and installation data, specifications, details and dimensions for *Speedwalk* and *Speedramp* moving sidewalks and their component parts. *Stephens-Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill.*

### Raymond Cylinder Piles

... of *Prestressed Concrete* describes and illustrates the manufacture, advantages and application of prestressed concrete cylinder piles and related prestressed products. 20 pp. *Raymond Concrete Pile Co., 140 Cedar St., New York 6, N. Y.\**

### Sloan Flush Valves

Catalog & Data Manual No. 60 contains technical data, detailed descriptions, and information on ordering and specifying Sloan flush valves. Product illustrations and installation diagrams are included. 64 pp. *Sloan Valve Co., 4300 West Lake St., Chicago 24, Ill.\**

### Structural Facing Tile (A.I.A. 10-B)

Revised specifications include changes in finish designations for glazed and unglazed structural facing tile. 20 pp. *Facing Tile Institute, 1520 18th St., N. W., Washington 6, D. C.\**

### Architect's Specification Guide

... For *Kentile Floors* (A.I.A. 23-G) presents recommended specifications for the five resilient floorings in the Kentile line. 16 pp. Also available is a folder which lists recommended and not recommended installations for each type of flooring, and contains light reflectance and cost range charts. *Kentile, Inc., 58 Second Ave., Brooklyn 15, N. Y.\**

### Nailing of Subflooring

Special Report No. 31 summarizes results of comparative tests on the effectiveness of plain-shank, barbed and threaded steel nails for fastening sub-flooring. 12 pp. *Wood Research Laboratory, Virginia Polytechnic Institute, Blacksburg, Va.*

### Byers PVC Pipe

Presents specific information on the general characteristics, properties, applications and installation of PVC (polyvinyl chloride) pipe, with technical data compiled in detailed tables and charts. 30 pp. *A. M. Byers Co., Clark Bldg., Pittsburgh 22, Pa.\**

### Aluminum Curtain Walls (A.I.A. 16-E)

Illustrates and gives typical elevations and details for outstanding applications of *Vamco* aluminum curtain walls. 12 pp. *Valley Metal Products Co., Plainwell, Mich.\**

### New Lessons in Arc Welding

Revised second edition includes new procedures, information on latest machines and electrodes, and modern teaching methods for manual arc welding. Illustrated, 320 pp. \$1.00 in U. S. A.; \$1.50 elsewhere. *Lincoln Electric Co., Cleveland 17, Ohio.*

### Grade-Aid Classroom Equipment

(A.I.A. 29-H-6, 35-B-4) Presents complete line of mobile, modular steel classroom equipment, including sinks, wall and storage units, wardrobes and carts. 4 pp. *School Equipment Mfg. Corp., 46 Bridge St., Nashua, N. H.*

\* Other product information in *Sweet's Architectural File, 1958*

(More Literature on page 242)

Typical installation of an Anemostat High Velocity Under-the-Window unit in a classroom.



## How to deliver high velocity air to schoolrooms

Shown here are two ways of using the Anemostat All-Air High Velocity system of draftless air distribution for heating and ventilating schools. Under-the-Window units (above) are the most practical for colder climates. Corridor distribution (below) is preferable in warmer climates.

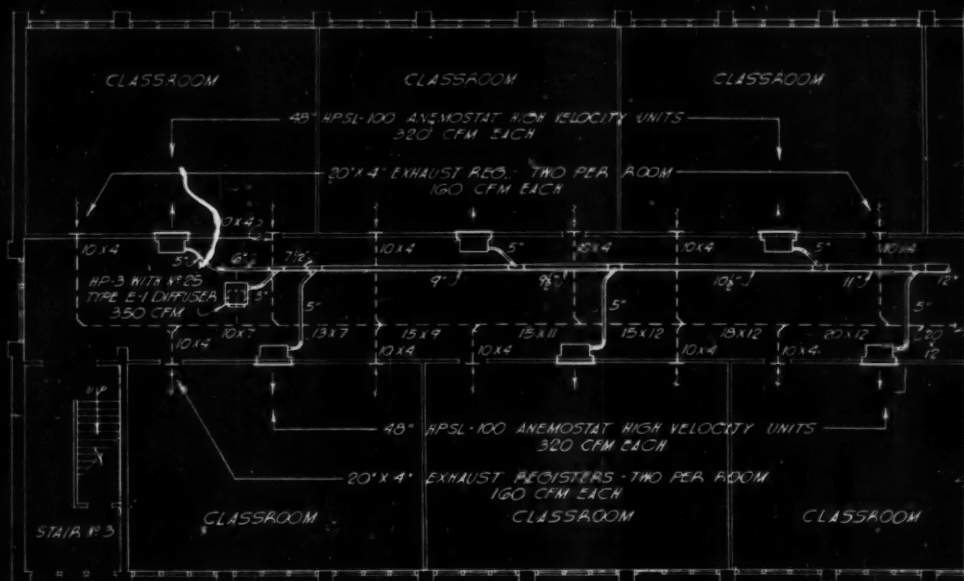
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Diagrammatic layout shows corridor distribution of high velocity air for wing of school.



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## HOUSE ANCHORAGES: 5—Tabular Check for Wind Fressure

By ALBERT G. H. DIETZ

Tables Below Give Specific Values of Resistance to Sliding and Overturning for One- and Two-story Houses, and Correspond to Values in Graphs on Sheet 4

**TABLE 4: One-story House, Wind Pressure (psf) Necessary for Sliding**

Weight Per Unit Length of House (lb)	Roof Slope in Degrees						
	0	10	20	25	30	35	40
600	11.7	12.7	13.1	13.8	14.0	13.7	13.3
800	15.6	17.0	17.4	18.4	18.7	18.3	17.7
1000	19.5	21.2	21.8	23.0	23.4	22.8	22.1
1200	23.4	25.4	26.2	27.6	28.0	27.2	26.7
1400	27.4	29.7	30.5	32.2	32.7	31.8	31.0
1600	31.2	33.9	34.9	36.8	37.4	36.4	35.4
1800	35.1	38.2	39.2	41.4	42.0	40.8	39.8
2000	39.0	42.4	43.6	—	—	45.1	44.2
2250	44.0	—	—	—	—	—	—

**TABLE 5: One-story House, Wind Pressure (psf) Necessary for Overturning**

Weight Per Unit Length of House (lb)	Roof Slope in Degrees						
	0	10	20	25	30	35	40
600	9.5	9.8	10.1	11.7	13.7	13.7	13.7
800	12.7	13.1	13.5	15.7	18.2	18.5	18.5
1000	15.8	16.3	16.9	19.6	22.8	23.0	23.0
1200	19.0	19.6	20.2	23.5	27.3	27.7	27.7
1400	22.2	23.0	23.6	27.5	31.9	32.3	32.3
1600	25.4	26.2	27.0	31.4	36.4	36.9	36.9
1800	28.5	29.5	30.3	35.3	41.0	41.5	41.5
2000	31.8	32.8	33.7	39.2	—	—	—
2250	36.5	36.7	37.9	43.0	—	—	—

**TABLE 6: Two-story House, Wind Pressure (Psf) Necessary for Sliding**

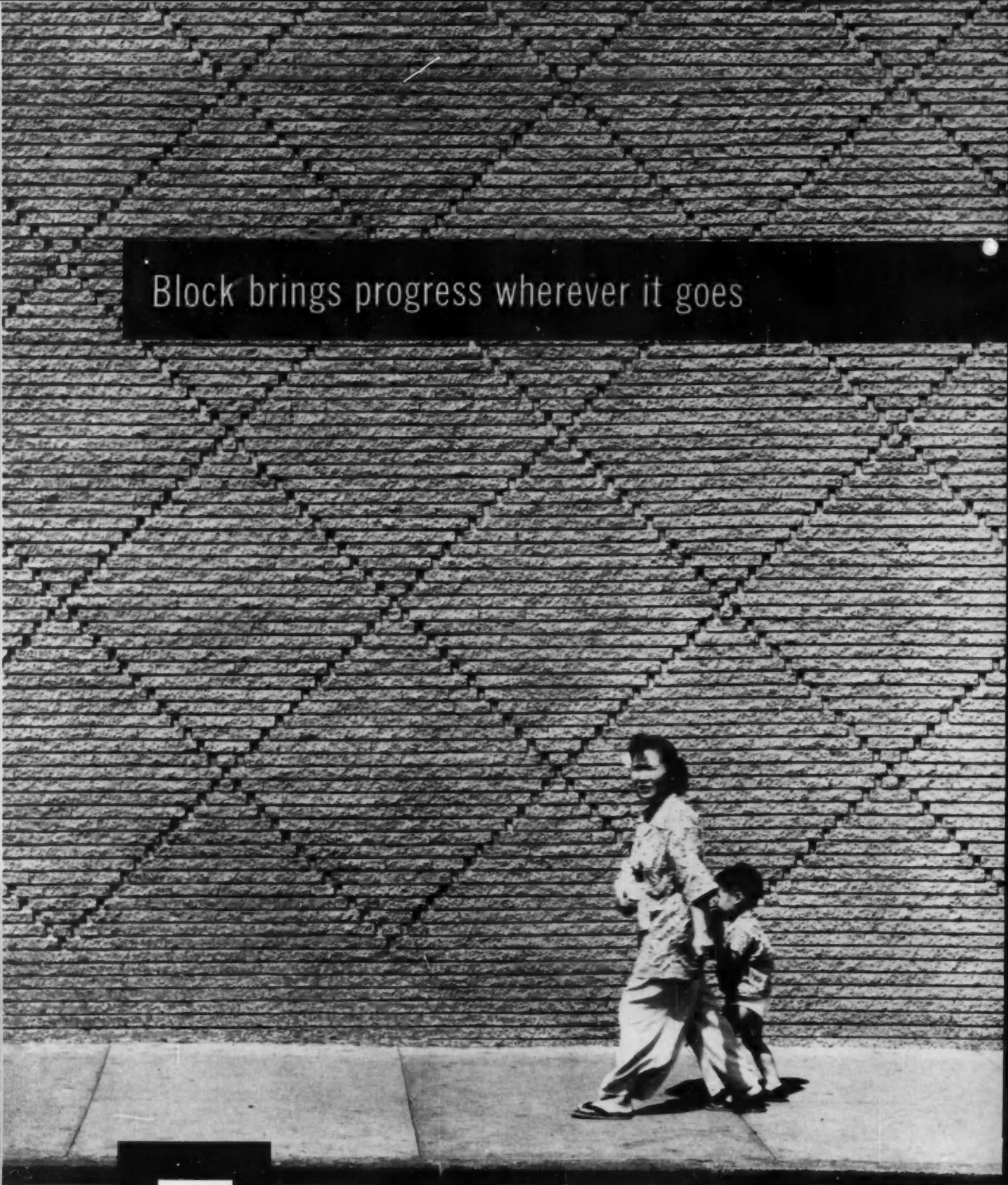
Weight Per Unit Length of House (lb)	Roof Slope in Degrees						
	0	10	20	25	30	35	40
1250	18.7	20.0	20.2	21.4	21.6	21.2	20.6
1500	22.5	24.0	24.5	25.6	25.9	25.4	24.8
1750	26.2	28.0	28.6	29.9	30.2	29.6	28.9
2000	30.0	32.0	32.6	34.2	34.5	33.8	33.0
2200	33.0	35.2	35.9	37.6	38.0	37.2	36.2
2400	36.0	38.4	39.2	41.0	41.5	40.6	39.6
2600	39.0	41.6	42.4	44.5	—	—	42.8
2800	42.0	—	—	—	—	—	—

**TABLE 7: Two-story House, Wind Pressure (Psf) Necessary for Overturning**

Weight Per Unit Length of House (lb)	Roof Slope in Degrees						
	0	10	20	25	30	35	40
1250	16.6	17.2	17.8	20.0	21.6	21.4	20.9
1500	19.8	20.6	21.4	24.0	26.0	25.6	25.0
1750	23.2	24.0	24.9	28.0	30.3	29.9	29.2
2000	26.5	27.5	28.6	32.0	34.6	34.2	33.4
2200	29.1	30.2	31.4	35.2	38.1	37.8	36.7
2400	31.8	33.0	34.2	38.4	41.5	41.0	40.0
2600	34.4	35.7	37.1	41.5	—	—	43.4
2800	37.0	38.5	39.9	—	—	—	—
3000	39.8	41.3	42.7	—	—	—	—

### Typical Unit Weights of Building Materials

Asbestos shingles—siding	1.75 psf
Asbestos shingles—roofing	2.60 "
Asphalt shingles—roofing	2.10 "
Gypsum sheetrock— $\frac{1}{2}$ in.	1.50 "
Gypsum sheetrock— $\frac{1}{2}$ in.	2.00 "
Gypsum plaster— $\frac{3}{4}$ in.	4.00 "
Plywood— $\frac{1}{4}$ in.	0.80 "
Plywood— $\frac{1}{2}$ in.	0.95 "
Plywood— $\frac{3}{4}$ in.	1.10 "
Plywood— $\frac{1}{2}$ in.	1.50 "
Plywood— $\frac{3}{4}$ in.	1.80 "
Plywood— $\frac{1}{2}$ in.	2.20 "
Asphalt tile flooring	1.50 "
Insulation board—25/32 in.	1.20 "
Insulation—mineral wool	0.50 "
4 in. brick masonry veneer	50.00 "
Wood—Douglas Fir	
3.0 lb/bd ft	35 lb per cu ft
Shortleaf pine—3.0 lb/bd ft	36 "
Hemlock—2.5 lb/bd ft	29 "



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(Continued from July 1957 Issue)

# HOUSE ANCHORAGES: 4—Graphic Check for Wind Pressure

By ALBERT G. H. DIETZ\*

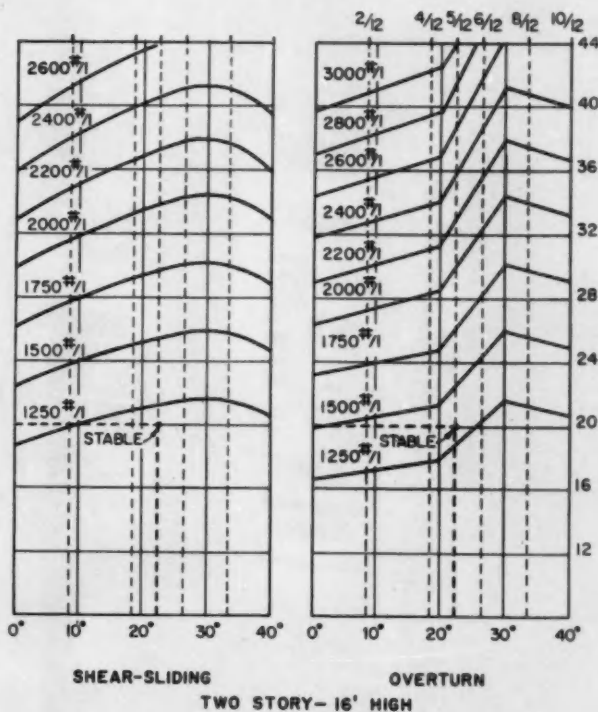
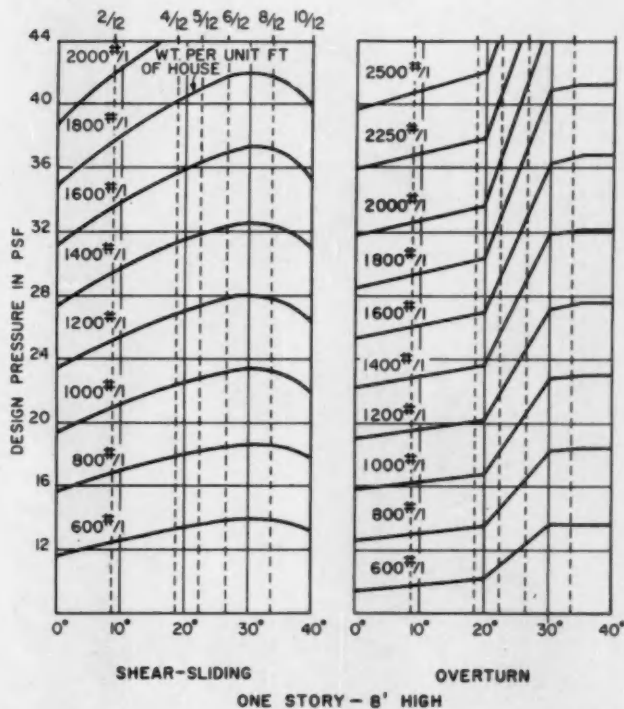
A rapid approximate approach for wind design is set forth on this Sheet. The graphs are based on average ratios of widths to heights of houses, as usually found, and take into account the pitch of the roof, whether the house is one story (8 feet) or two stories (16 feet) high, the design wind pressure, and the weight of the house. The graphs are for overturn and sliding, the conditions which usually control. An example shown on the chart is for a 2-story house, 5/12 pitch, in a 20-pound per square foot wind pressure zone. The graph shows that a house weighing 1250 pounds per foot is stable against sliding, and a house weighing 1500 pounds per foot is stable against overturn.

The graphs are intended for rapid determination of obviously stable conditions. If the graphs indicate a borderline or unstable condition, the more exact analysis described on Sheets 1-3 should be employed.

\* Professor of Building Engineering and Construction, Massachusetts Institute of Technology, Cambridge, Mass., and Chairman, BRAB Special Advisory Committee for the study, "The Anchorage of Exterior Frame Walls to Various Types of Foundations," conducted by the National Academy of Sciences-National Research Council at the request of the Federal Housing Administration, 1955-56.

The members of the committee were: Albert G. H. Dietz, Reuben W. Binder, A. T. Masters, Ernest T. H. Bowen, Clarence W. Farrier, Harry C. Plummer, Benjamin C. Taylor, Leonard G. Haeger, T. C. Combs, Henry Giese, R. H. Sherlock, E. George Stern, Richard Hudson, James P. Thompson, R. F. Luxford, Carrol L. Schuyler (Alternate), Clyde N. Dirlam (Alternate), Theodore Leba, Jr. (Consultant), Robert M. Dillon, Building Research Institute Staff Architect (Secretary).

The complete report can be obtained by writing to Publications Office, National Academy of Sciences, 2101 Constitution Avenue, Washington 25, D. C. Full title, description, and price of the publication are: "FHA-6. Anchorage of Exterior Frame Walls to Various Types of Foundations," 1956; 71 pp., paper; \$1.50. Pub. 446.







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# HOUSE ANCHORAGES: 6—Resistance to Earth Pressure

By ALBERT G. H. DIETZ

## Earth Pressure

Foundation walls may collapse because of earth pressure if they are not restrained at the top, whereas they may be completely adequate if lateral top support is provided. Such lateral support may be provided by the superstructure, either by frictional resistance to movement of the top of the foundation, or by anchorage between the foundation and the superstructure.

A simplified approach to determine the need for anchorage is illustrated in Figure 4. The foundation wall is considered to be a simple beam supported laterally top and bottom. Earth pressure has a horizontal component assumed to act as shown. The computations for  $R_1$ , the horizontal thrust at the top of the wall, are shown. The weight of the superstructure exerts a frictional horizontal force  $F$  which may be large enough to equal  $R_1$ . Because loads here are long-time rather than short as in wind loading, the frictional coefficient is reduced to  $\frac{1}{2}$  instead of being taken as  $\frac{3}{4}$  as in wind.

Active horizontal earth pressures vary from an insignificant amount as in tamped backfills of cohesive soils to greater than hydrostatic as in heavily saturated soils. Such pressures may be difficult to determine. For average conditions a horizontal thrust  $P$  of 20 pounds per square foot is suggested. This should be raised to 40 pounds per square foot if hydrostatic conditions are suspected. Unusual condi-

tions call for special investigation.

Explanation of Fig. 4 follows:

$R_1$  = reaction at top of foundation wall.

$R_2$  = reaction at bottom of foundation wall.

$P$  = approximate horizontal resultant earth pressure per foot of wall applied at  $d/3$  up from the top of the footing.

$d$  = depth of backfill

$h$  = height of foundation wall

$p$  = horizontal earth pressure in psf.

Taking moments about  $R_2$ :

$$\frac{Pd}{3} - R_1h = 0 \text{ and } P = \frac{pd^2}{2}$$

$$\therefore R_1 = \frac{pd^2}{6h}$$

Coefficient of friction =  $\frac{1}{2}$ . The horizontal resisting force at top of wall,  $F = \frac{1}{2}sw$  ( $w$  = superimposed weight per linear foot bearing on the wall);

$$\therefore F = R_1$$

$$\frac{1}{2}sw = \frac{pd^2}{6h}$$

Solving for " $w$ ", " $h$ ", and " $d$ " respectively:

$$w = \frac{pd^2}{2h}$$

$$h = \frac{pd^2}{2w}$$

$$d = \sqrt{\frac{2wh}{p}}$$

Table 8 gives some computed values of  $w$ ,

or "unnecessary" weights of superstructure per foot of length of foundation wall, to provide lateral stability without anchorage, for earth pressures varying from 20 to 40 pounds per square foot. If the weight of superstructure is less than indicated, anchorage should be provided for the excess horizontal thrust  $R_1$  above that resisted by friction. It can be computed in much the same manner as the horizontal thrust for wind, except that no increase in allowable stress against wood, for example, may be employed. Earth pressures are not short-time loads.

## Earthquake

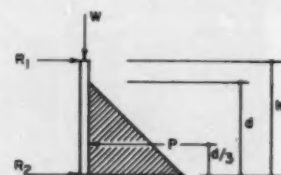
Although formulas for the calculation of seismic forces have been developed, the committee adopted the recommendations of its members from earthquake areas that in those areas anchorage for frame houses should consist of at least half-inch round anchor bolts, not more than six feet on centers, embedded not less than 7 inches in poured concrete or not less than 15 inches in concrete block or other masonry.

The committee concluded that it had insufficient data to make firm recommendations respecting allowable loads on various devices and recommended further research and analysis of existing data. Available data are tabulated in the full report for the information of interested users.

TABLE 8: Minimum Required Superimposed Weight

d (ft)	h (ft)	w (lb/ft)		
		p = 20 lb/ft <sup>2</sup>	p = 30 lb/ft <sup>2</sup>	p = 40 lb/ft <sup>2</sup>
4	6	106.7	116.0	214.0
4	7	91.5	136.0	183.0
4	8	80.0	118.6	160.0
5	6	208.3	313.0	417.0
5	7	178.6	266.0	357.0
5	8	156.3	232.0	313.0
6	7	309.0	461.0	618.0
6	8	258.0	385.0	515.0
7	8	429.0	640.0	858.0
8	9	569.0	854.0	1140.0
8	10	512.0	765.0	1025.0

Fig. 4



When only the finest is acceptable—

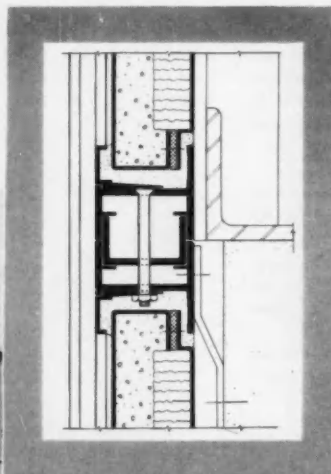
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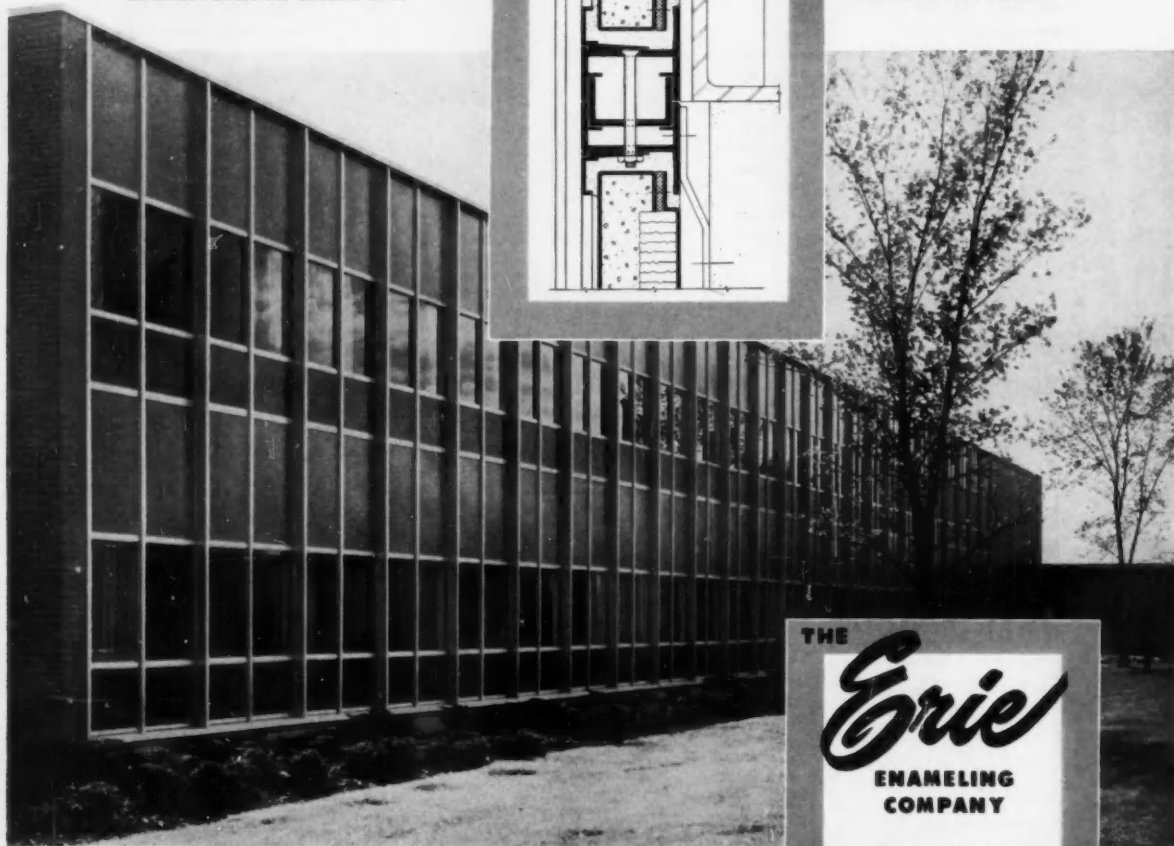
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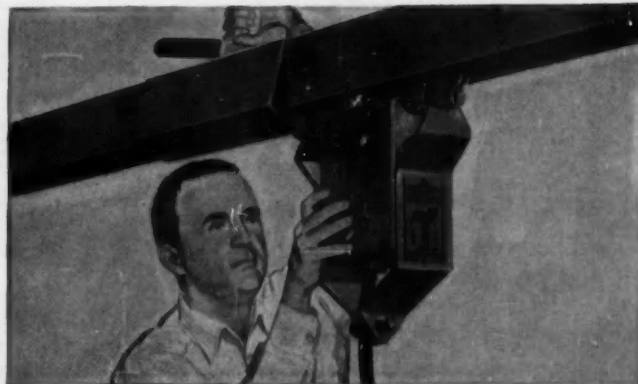
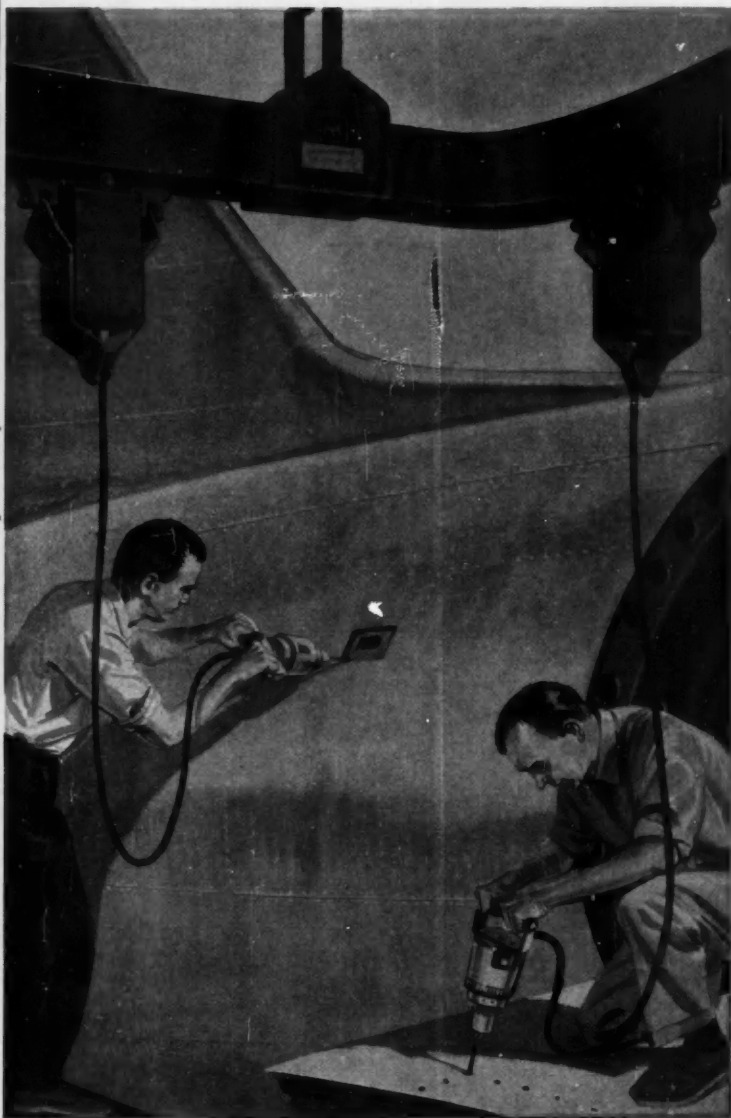


Details at left show a cross section illustrating the special modification of the Erie U-16 Panel used and the method of attachment.



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## TECHNICAL ROUNDUP

(Continued from page 196)

### STUDENT-BUILT LABORATORY TO TEST TRUSSED RAFTERS



Students at Virginia Polytechnic Institute have recently completed an experimental laboratory building in which five types of lightweight trussed rafters of "W" design were used to span the thirty feet between the outside walls. The rafters are to be tested in use over a long period, the first tests being deflection measurements taken before, during and after their erection. According to the Institute, the data obtained to date has already yielded information not previously available.

Built mainly of 2 in. lumber, the twenty-one rafters used for the building are spaced 2 ft apart and are designed to carry a roof load of 35 psf. The five types include nail-glued trussed rafters with plywood gusset plates; split-ring connected trussed rafters; "H-Brace" connected trussed rafters with one-piece, 19-gauge steel plates bent to form an "H" between the jointed structural members; *Tim-Plate* connected trussed rafters with two 20-gauge galvanized steel plates inserted into two symmetrically spaced saw kerfs at each joint to connect the structural members; and the V.P.I.-designed nailed trussed rafters with lumber gusset and splice plates fastened to the structural members with hardened high carbon steel, helically threaded nails. All the trussed rafters were anchored to the plates and masonry walls — some toe-nailed to the plates with four 20d hardened steel, annularly threaded nails; others face-nailed with two 8 in. hardened steel, annularly or helically threaded spikes; and still others held down with sheet-steel angles, *Trip-L-Grips* or *Hurricane Braces*.

The building was erected under the

supervision of William L. Favrao, professor in charge of the building construction curriculum at Virginia Polytechnic Institute. Dr. E. George Stern, research professor of wood construction and head of the Institute's wood research laboratory, planned the roof construction and the long-time testing of the trussed rafters.

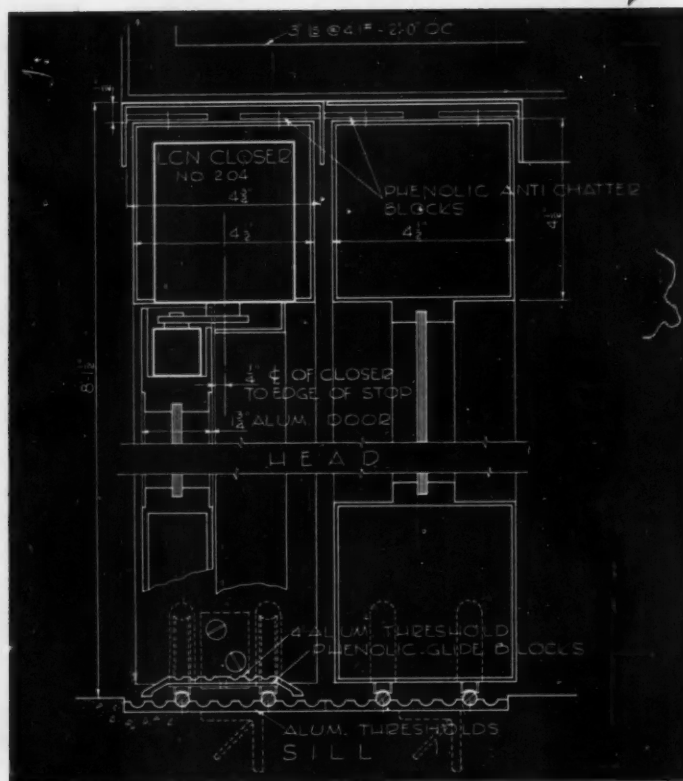
### 5½ Mile Span to Bridge Lake Maracaibo

A prestressed concrete bridge is being thrown across one end of Lake Maracaibo, Venezuela's fabulous "money lake," to the tune of 100 million dollars.

One of the longest bridges in the world, it will have a center span of 1300 ft, five secondary spans of 500 ft, and smaller spans of 60 ft or more for a total length of 5½ miles. Work on the huge project, which is due for completion in 1960, is being done by a Venezuelan company, Precomprimido, and its German associate, Julius Berger.

According to residents of Maracaibo, the bridge is expected to spark still further development of the lake and shoreline installations which already produce more than two-thirds of Venezuela's oil.

(More Roundup on page 212)



### CONSTRUCTION DETAILS

for LCN Overhead Concealed Door Closer Installation  
Shown on Opposite Page

Each pair of doors is self-contained in a rigid frame. One pair slides to the right, one to the left, of the opening. The fixed glass panel, in its own frame, slides to the left on its own track into pocket back of the left pair of doors. The LCN 200 Series Closers are inside the head frames, arms folding into stop, out of sight. An ideal closer for this requirement.

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Normal Access Doors Controlled by *LCN* Closers Concealed in Head Frame

BERGNER'S DEPARTMENT STORE IN SHERIDAN VILLAGE, PEORIA, ILLINOIS

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page



Store Closed, Doors in Place

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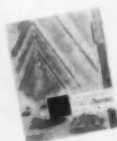
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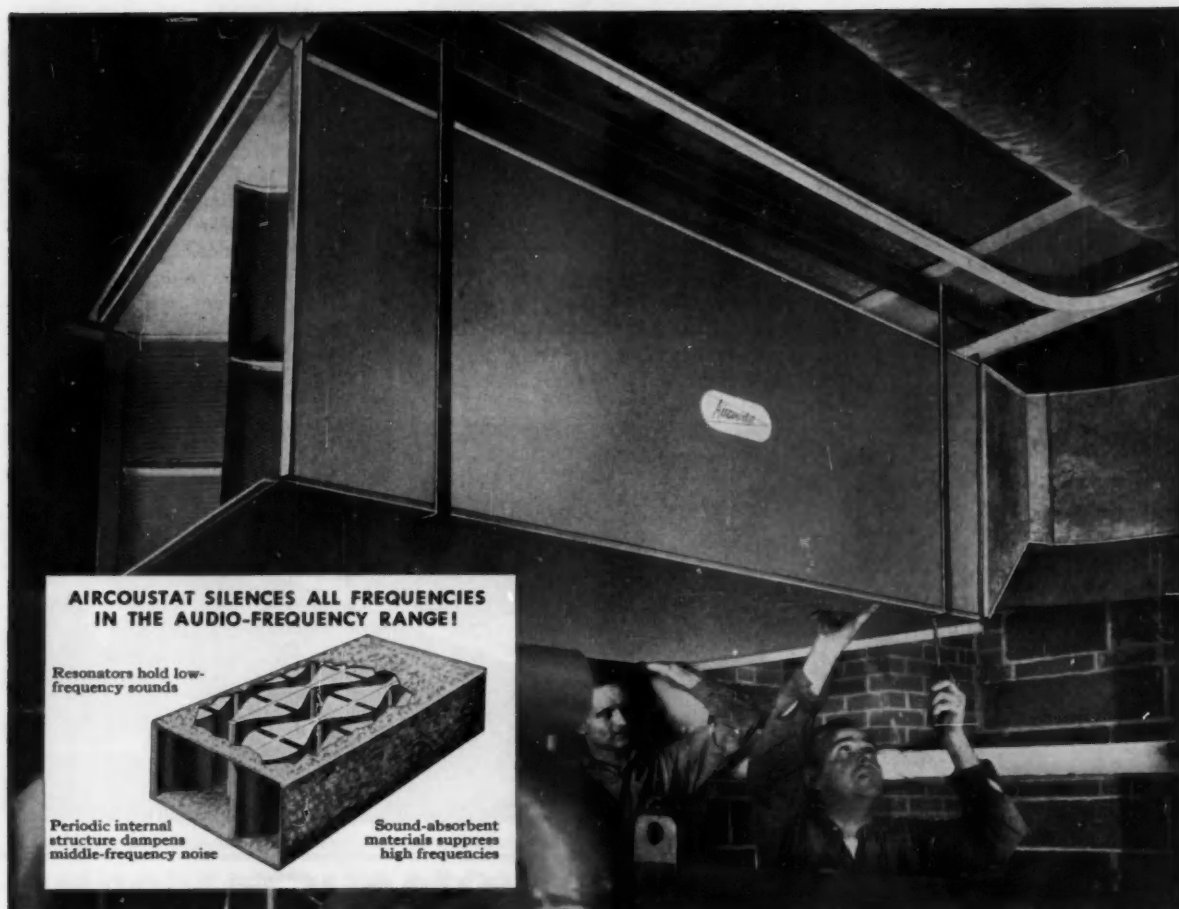
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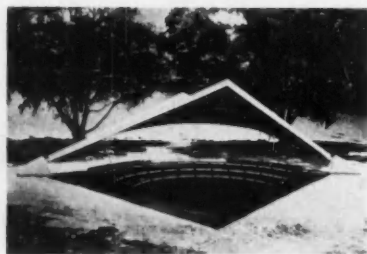
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## TECHNICAL ROUNDUP

### HYPERBOLIC PARABOLOID BAND SHELL COLLAPSES FOR STORAGE



A demountable hyperbolic paraboloid — believed to be the first of its kind — has completed its first summer's service as a bandshell for a series of outdoor concerts at Fort George G. Meade, Maryland. Formed of two layers of  $\frac{3}{4}$  in. pine framed by steel edge beams, the shell was designed in such a way that it can easily be sawed into separate panels, stowed away for the winter, and then reassembled in three days by simply bolting the panels back together.

The completed shell has a roof area of 2000 sq ft, painted white on the top-side, maple-stained beneath. From the fleche or central point, which is eleven feet off the ground, it curves upward to

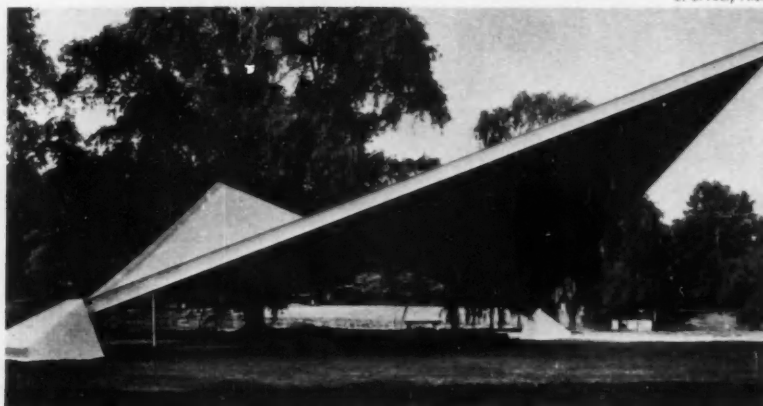
a height of 23 ft at the front, 15 ft in the rear. The resulting curved plane perches butterfly fashion on two concrete buttresses 60 ft apart, maintained in its precarious position by tensile stiffeners at the rear of the shell.

Because the hyperbolic paraboloid form permits maximum use of a minimum of material, the shell is both lightweight (approximately 10 lb per sq ft) and inexpensive (\$2.50 to \$3.00 per sq ft.) Its primary purpose — to disperse sound — is also fulfilled by the hyperbolic paraboloid shape. Sound is projected from the shell in a conical

distribution pattern roughly 200 ft wide and 400 ft long, and the natural reflective qualities of the wood undersurface are further reinforced by baffles in the wings.

The shell was designed, and its construction supervised, by Pfc. Steven M. Jones, a young architect assigned to the Post Engineer's Office at Fort Meade. In discussing his choice of a hyperbolic paraboloid form for the bandshell, Jones points out that the resulting structure is lightweight, economical, easily constructed — and easily dismantled. His summary: "It happened to fit the problem."

U. S. Army Photo



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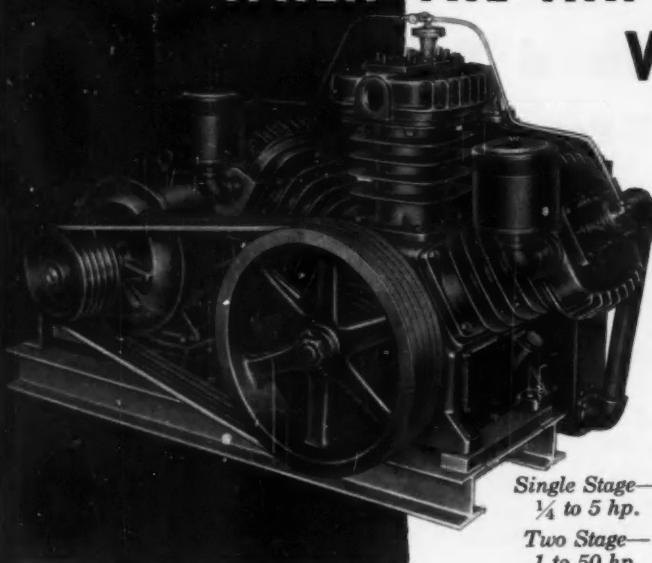
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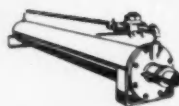
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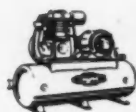


Single Stage—  
 $\frac{1}{4}$  to 5 hp.

Two Stage—  
1 to 50 hp.



AIR CYLINDERS  
AND AIR HOISTS



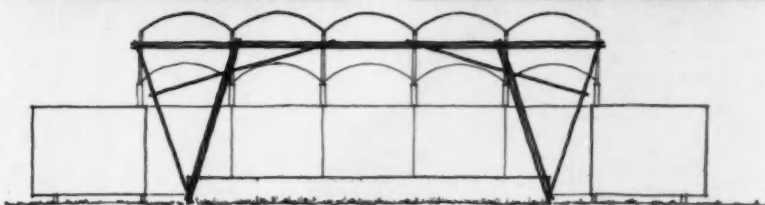
VERTICAL OR  
HORIZONTAL  
TANK MOUNTED  
COMPRESSOR  
 $\frac{1}{4}$  THRU 15 HP.



## ARTS FESTIVAL FEATURES PLYWOOD VAULTED ROOFS

Two displays at the San Francisco Arts Festival last September were sheltered by a pair of pavilions as interesting as the exhibits themselves. Designed by Evelyn and George Kosmak, in conjunction with the Berkeley Plywood Company, the twin pavilions were roofed with plywood vaults extending in opposite directions from adjacent sections of a common wall. Each was made up of an eleven foot vault with a clear span of 40 ft, plus an 8 ft cantilevered overhang at each end. The vaults, which were prefabricated in 8 ft sections, consist of two 4 by 12 ft panels of  $\frac{1}{2}$  in. fir plywood, joined with a plywood cleat and bent over a form. These panels were nailed and glued to beveled 3 by 4 in. flanges and steel tension rods were inserted to maintain the desired curvature. When the vaults were assembled at the site, the curved sections were connected by plywood cleats and screws, according to calculations made by structural engineers Mackintosh and Mackintosh of Los Angeles. The addition of a one foot overhang over the sides of the vaults, brought the total area covered by each pavilion to 728 sq ft.

The bandshell for the festival, also



Bandstand Elevation

designed by the Kosmacks and fabricated by Berkeley, repeated the theme introduced by the pavilions. Five smaller vaults, each 24 ft long by 8 ft wide, were placed side by side to form a sheltering canopy for the 16 by 32 ft stage. As shown, the resulting scalloped roof was supported by light steel tube scaffolding. The vaults themselves each consist of six 4 by 9 ft sandwiches of light top and bottom plywood skins, glued to curved framing members. The

walls of the dressing rooms at the rear of the stage were also constructed of plywood panels, similar to conventional stressed skin panels, but with their plywood skins curved to a 64 in. radius.

Both the complete vaults and the smaller sections are currently being produced by Berkeley Plywood as standard components under the trade name *Plyvault*, and are expected to find wide application in the building industry.

## IMPORTANT REASONS WHY

**Architects-Engineers-  
Contractors and Owners**

**prefer the CURTIS 50 Ton  
PACKAGED AIR CONDITIONER**

**INSTALLATION EASIER:** Line assembled at the factory—eliminates expensive field labor.

**PERFORMANCE KNOWN:** Curtis units are run-in at the factory and guaranteed to deliver their rated tonnage. Assures a **BALANCED SYSTEM**.

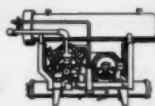
**DELIVERY ON TIME:** Curtis can meet your delivery requirements, a decided advantage over multiple supplier delivery promises!

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ARCHITECTURAL  
FILE  
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# Curtis

OUR 103rd YEAR



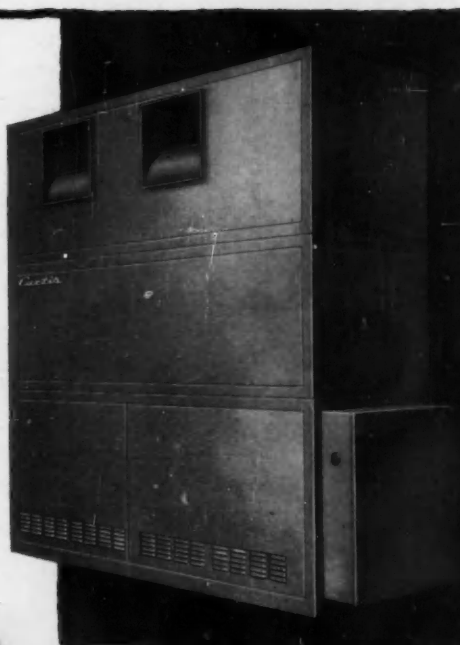
PACKAGED  
LIQUID  
CHILLER  
UP TO  
100 TONS



PACKAGED AIR  
COOLED UNITS  
UP TO 7½  
TONS



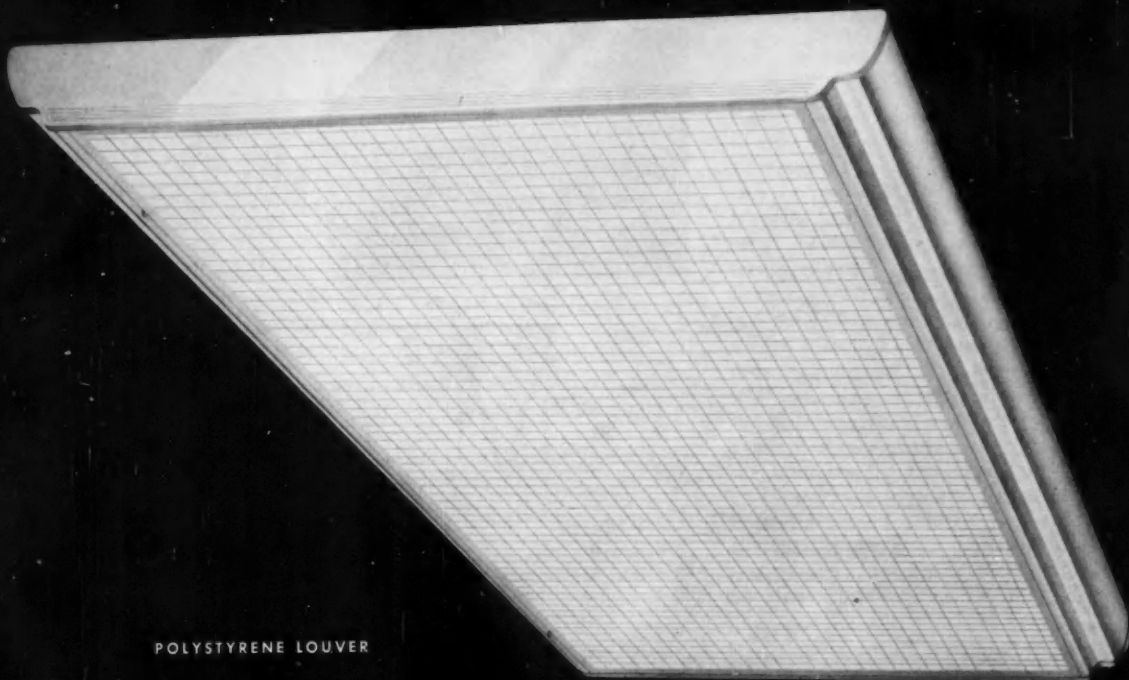
AIR HANDLING UNITS  
COOLING TOWER  
AND EVAPORATIVE  
CONDENSER  
TO MATCH



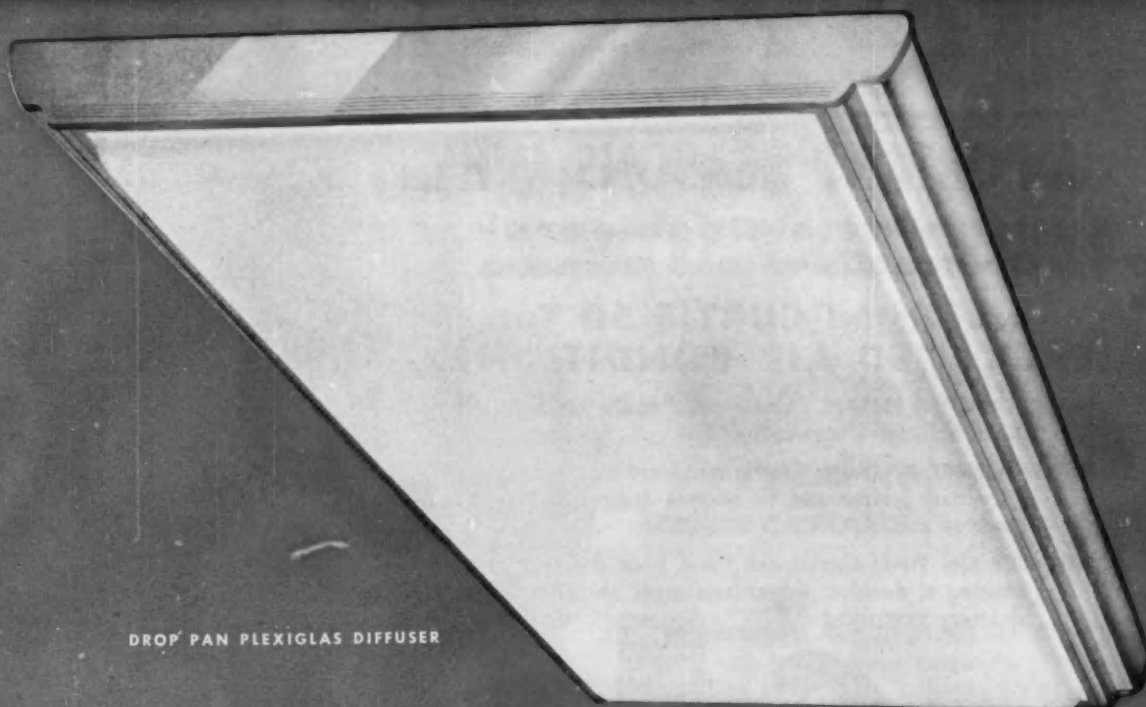
**MANUFACTURING CO.  
REFRIGERATION DIVISION**

1986 Kienlen Ave., St. Louis 20, Mo.

CM-23



POLYSTYRENE LOUVER



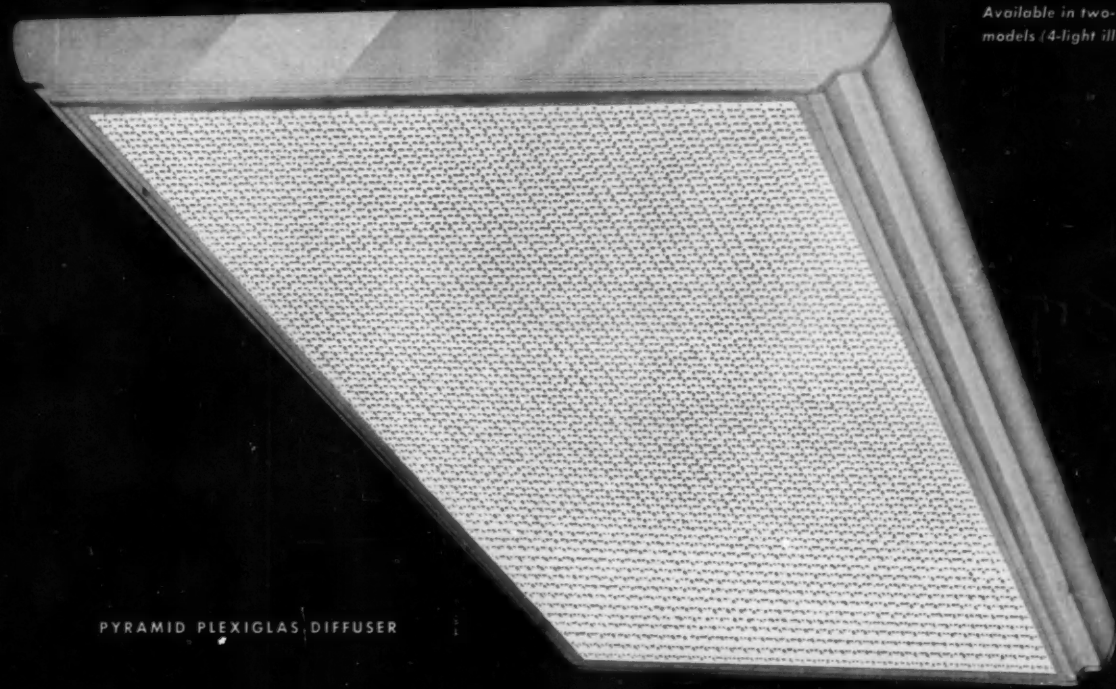
DROP PAN PLEXIGLAS DIFFUSER



**GIBSON MANUFACTURING COMPANY**

IN CANADA manufactured under franchise by ELECTROLIER MANUFACTURING CO., LTD., Montreal,  
one of Canada's oldest and largest manufacturers of lighting fixtures.

Available in two- and four-light  
models (4-light illustrated)



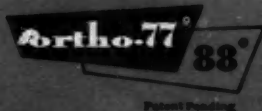
PYRAMID PLEXIGLAS DIFFUSER

## the new Gibson Ceilo-35<sup>\*</sup>

A fixture of incomparable beauty,  
designed expressly for low-ceiling application.

Measures only 2¾" in depth and  
features exclusive parabolic reflectors  
which provide a smooth, shadowless  
panel of light.

Makers of the  
world's most versatile fixtures

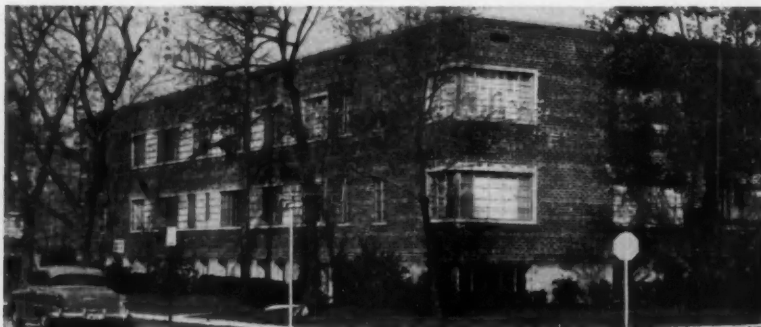


You really ought to know more about it—so why not drop  
us a line now for complete information on the Ceilo-35?

<sup>\*</sup> Patent Applied For

1915 Piedmont Circle, N.E., Atlanta 9, Georgia





(Above) Suburban Apartment House using Wing Draft Inducers



(Above) Modern school using Wing Draft Inducer



(Below) Industrial Plant equipped with Wing Draft Inducers

## Look! — no chimneys

**MODERN** buildings are now being designed without tall obtrusive chimneys marring their clean horizontal lines. This refreshing trend is made possible by the use of Wing Draft Inducers in the boiler or furnace room, eliminating the necessity for stack or chimney.

But that is only one of the advantages of Wing Draft Inducers. Another is the substitution of positive, uniform, adequate draft at all times, regardless of wind, weather or load variations.

Savings through these advantages are impressive. Write for a copy of Bulletin I-57 and see for yourself.

**L. J. Wing Mfg. Co.** 151 Vreeland Mills Road • Linden • N. J.  
DIVISION OF AERO SUPPLY MFG. CO. INC.



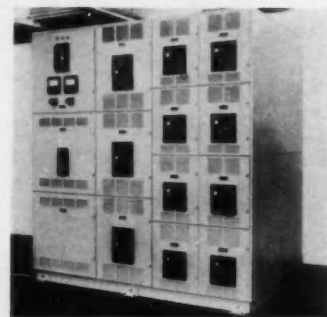
FANS • UNIT HEATERS • DRAFT INDUCERS • BLOWERS • TURBINES

### PRODUCT REPORTS

(Continued from page 197)

#### Neoprene Sealing Compound

*Slay-Tite*, a neoprene sealing compound designed to seal horizontal and vertical expansion joints in curtain wall construction, is ready to use as it comes from the container, has unlimited potlife and requires no special equipment for mixing or storage. Other advantages cited for the sealer include weather and chemical resistance, flexibility, ease of application and excellent adhesion to both porous and non-porous surfaces. Available colors are white, black and aluminum. *Slay-Tite Products Co., Dept. AR, Cleveland 4, Ohio.*



#### Low Voltage Power Equipment

According to the manufacturer, the complete redesign of I-T-E low voltage power circuit breakers and switchgear has resulted in improved performance, simplified operation and servicing, and increased standardization in construction and assembly. The circuit breakers — 600 volt units in 225, 600 and 1600 amp frame sizes — feature spring-action "quick-make" manual closure; stored-energy electrical closure that cuts secondary circuit requirements; easily interchangeable overload trips; and increased accessibility for operation and servicing. As much as one-third smaller and 55 per cent lighter than comparable units, they have the first subassembly construction in the low voltage power circuit breaker field, permitting easier and faster parts replacing and servicing. The size reduction also makes it possible to stack the 600 amp breakers four-high in a standard 90 in. high enclosure. The new switchgear, said to be the smallest in frontal area yet designed, introduces a closed-door draw-out that allows the breakers to be moved within their enclosure without opening the switchgear cabinet doors. *Switchgear Div., I-T-E Circuit Breaker Co., Philadelphia, Pa.*

(More Products on page 220)





Elevator Doors open instantly as car arrives at floor



Doors are wide open as Tulsa Scout Troop 134 starts to leave operatorless elevator



Polite Doors remain open and motionless as long as necessary



Doors close promptly after last Scout leaves the car



The **PHILTOWER** building in Tulsa, Okla., was contributed by Mr. Waite Phillips to the Boy Scouts of America. The income derived from its operation is used to support the Philmont Scout Ranch in New Mexico.

## TO MEET PASSENGER TRAFFIC DEMANDS... **TRAFFIC SENTINEL® IS "PREPARED," TOO!**

Tulsa's **PHILTOWER** is another example of a building modernization program which included Westinghouse operatorless elevators equipped with magic Traffic Sentinel doors. Existing buildings can now have all the advantages that alert and courteous elevator doors afford tenants and visitors. Doors don't frighten passengers with threatening movements or premature door closings. Traffic Sentinel has an

electronic mind of its own and uses it solely for passengers' convenience.

See Operatorless Elevators with Traffic Sentinel in action—the finest elevator system yet devised—by contacting the Westinghouse Elevator representative nearest you.

YOU CAN BE **SURE**...IF IT'S  
**Westinghouse**

J-98753AA

WESTINGHOUSE ELEVATORS AND ELECTRIC STAIRWAYS

**Air Conditioned  
Throughout with**



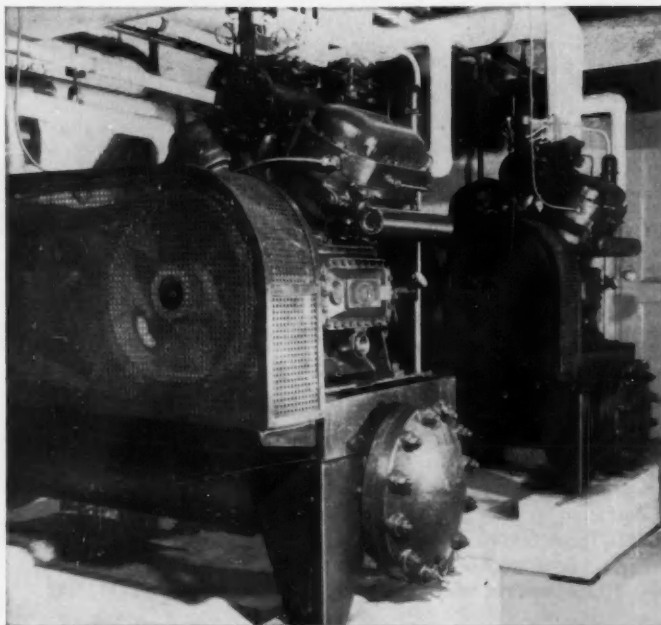
**Refrigeration**



4200 Marine Drive Apartments, Chicago, Ill. Architect: Lewis Simon. Mech. Eng.: Arthur Wallace. Installing Contractors: Midwest Eng. & Equipment Co., Economy Plumbing & Heating Co.

**These sixty-four new apartments at 4200 Marine Drive, in Chicago, enjoy complete air conditioning, among other advantages.**

Two "ECLIPSE" refrigerating units, installed by Midwest Engineering and Equipment Co., Frick Sales-Representatives in Chicago, carry the cooling load with economy and dependability.



What are YOUR cooling needs? If you want cool air, cold drinking water, ice, freezer temperatures, or refrigeration for processing—in any commercial or industrial size—let us quote now on your requirements. Branches and Distributors in principal cities, the world over.

Frick "ECLIPSE" refrigerating units at 4200 Marine Drive Apartments, Chicago

**DEPENDABLE REFRIGERATION SINCE 1882**  
**FRICK CO.**  
WAYNESBORO, PENNA., U. S. A.



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TURNLOK



POLARIZED

a complete  
line of  
wiring  
devices  
of the  
Highest  
Character



20AC1 IVORY

SUPER  
AC SWITCHES

**P&S**

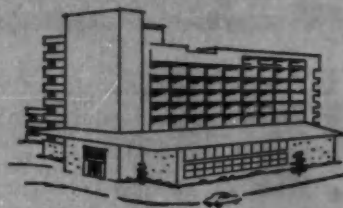
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*distinctive design...  
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Every time you write a specification, you bet your reputation on it. That's why it pays to specify only the best . . . products like P&S Super AC Switches. They're backed by the skill of Pass & Seymour — leaders in the wiring device field for over 65 years.

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For information about these and other quality P&S products write Dept. AR-26.



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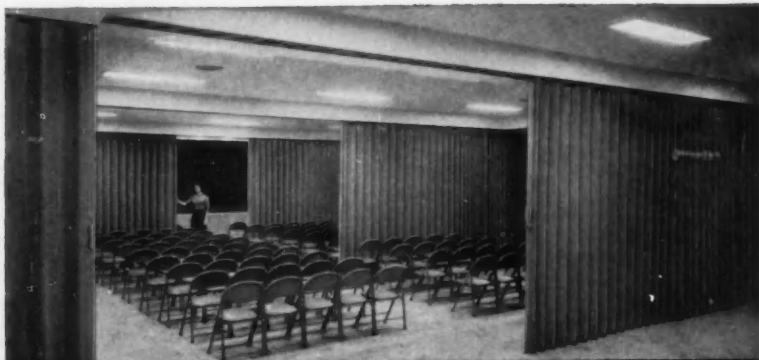
**PASS & SEYMOUR, INC.**

SYRACUSE 9, NEW YORK

60 E. 42nd St., New York 17, N. Y. 1440 N. Pulaski Rd., Chicago 51, Ill.  
In Canada: Renfrew Electric Limited, Renfrew, Ontario

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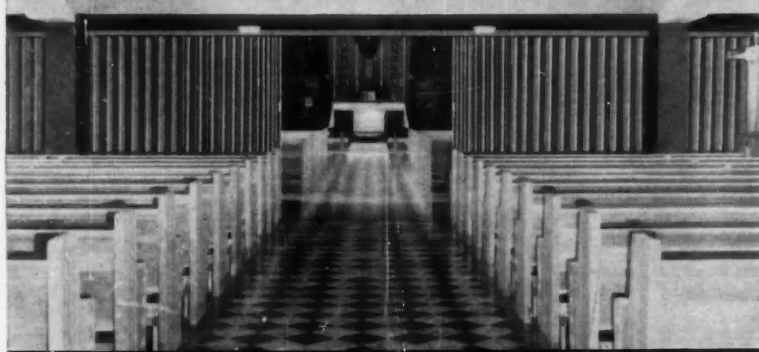




**FOLDOORS at First Presbyterian Church, Grand Haven, Mich.**



**FOLDOORS at First Baptist Church, Miami, Oklahoma**



**FOLDOORS at Trinity Lutheran Church, Springfield, Mo.**

● For flexible congregation space, for double-duty Sunday school and recreational rooms, leading architects everywhere are specifying FOLDOOR.

Whether for new construction or old, you'll be glad you followed their example. See your FOLDOOR distributor (listed in the yellow pages)—or write us direct.

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Montreal 26

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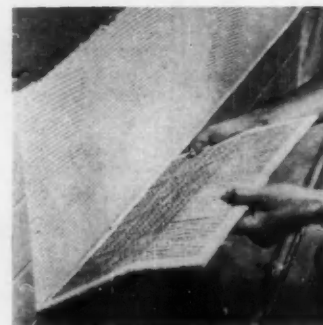


**PRODUCT REPORTS**



**Aluminum Sliding Glass Doors**

To eliminate cutting and waste, *Scen-eramic* aluminum sliding doors are made in a wide range of stock units designed to utilize standard glass sizes. All doors and frames are assembled from heavy gage heat-treated aluminum extrusions, and come from the factory complete with weatherstripping, door latch hardware and nylon roller assemblies. Wrap-around vinyl is furnished for fast, sure glazing of all models, including those using one inch insulating glass. Although all panels are made to slide, they may be fixed in position by installing accessory panel latches. *Merchandising Div., Oro Mfg. Co., Adrian, Mich.*



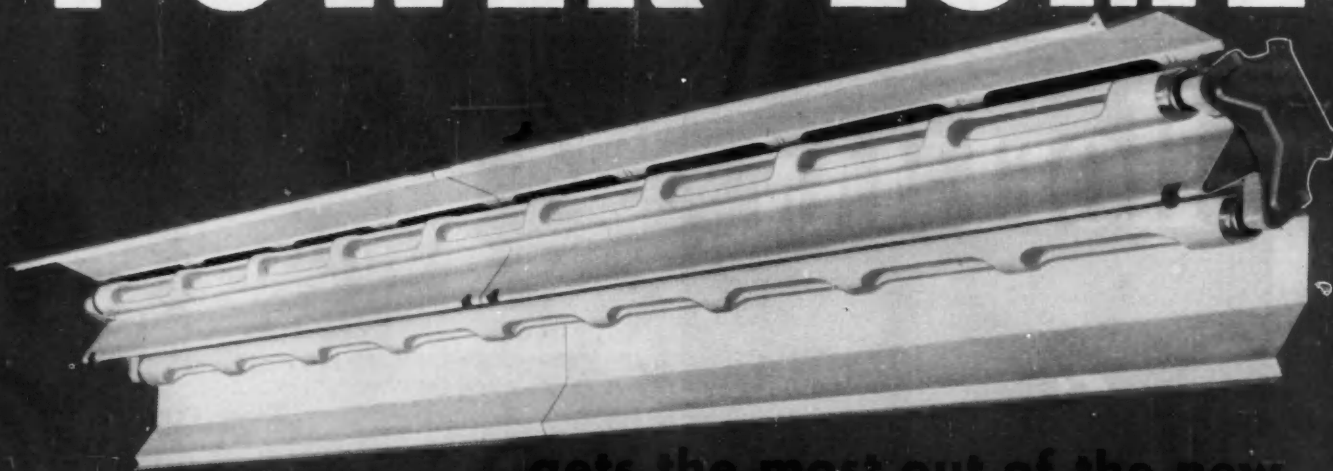
**Pre-Mounted Ceramic Wall Tile**

With new *Selfast* pre-mounted sheets of *Suntile*, one and a half square feet of ceramic wall tile can be installed as a single unit. The sheets, which can be applied with either adhesive or mortar, are composed of twelve regular  $4\frac{1}{4}$  by  $4\frac{1}{4}$  in. tiles, precisely spaced for grouting and permanently mounted on a specially developed mesh. According to the manufacturer, the concealed mesh speeds installation by adjusting to minor surface imperfections, unifies the tiles, and strengthens the tile-to-wall bond. One-by-two *Selfast* sheets of ceramic mosaic tile are also available. *The Cambridge Tile Mfg. Co., P. O. Box 71, Cincinnati 15, Ohio.*

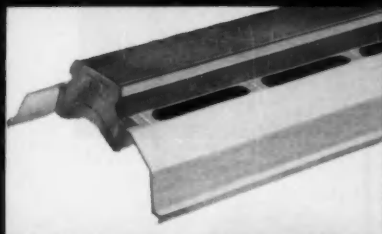
(More Products on page 224)



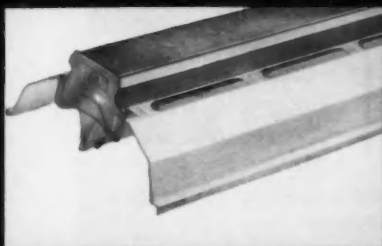
# *Wheeler* ULTRA-NEW **POWER-LUME**



## gets the most out of the new **POWER-GROOVE** L A M P S



**POWER-LUME F**



**POWER-LUME V**

### Delivers **TWICE** the amount of lumen output per foot of lamp length!

Today's big news in industrial lighting. 2 outstanding Wheeler units — Power-Lume F and Power-Lume V — specifically designed to utilize *fully* the extra illuminating power of the new Power Groove Lamp. Both fixtures are designed for all medium to high mounting applications . . . provide more comfortable seeing, cooler lamp operation, thanks to Wheeler's unique diffuser apertures that direct **MORE** than 20% of the light upwards.

**POWER-LUME F** (porcelain reflectors) are ideal for use where rough work is being performed and shielding is unimportant. Where reduced brightness is required, Power-Lume F with aluminum reflectors does the job best.

**POWER-LUME V** (with drawn one-piece porcelain reflectors) with increased shielding is the perfect lighting answer for those areas where more difficult seeing tasks are being performed. For maximum seeing comfort, Power-Lume V with drawn one-piece aluminum reflector is recommended.

Write for New Product Data Sheet No. 100 D  
NEWEST UNIT IN WHEELER'S "PACKAGE PLAN" LIGHTING

**WHEELER REFLECTOR CO.** (Division of Franklin Research Corp.)  
275 Congress St., Boston, Mass.

Distributed exclusively through electrical wholesalers.



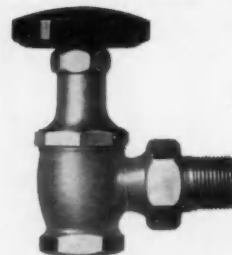
STEAM UNIT HEATER VENTS



FLOAT & THERMOSTATIC TRAPS



"Y" STRAINERS



SUPPLY VALVES

# HOFFMAN

*Complete Line of*

## Steam Specialties



MAIN VENTS



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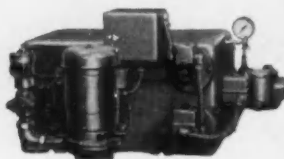
A COMPLETE QUALITY LINE ...

... A SINGLE SOURCE OF SUPPLY

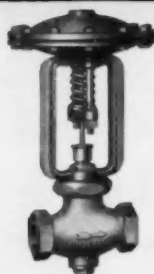
For either one-pipe or two-pipe residential or industrial systems there's a Hoffman Trap, Valve, Pump or other specialty designed to give you better control of every requirement.

Each Hoffman product is distinguished by exclusive features that assure customer satisfaction and long, trouble-free service. This complete, tested, quality line is backed by a dependable, single source of supply and responsibility.

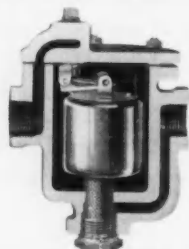
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VACUUM PUMPS



PRESSURE REDUCING VALVES



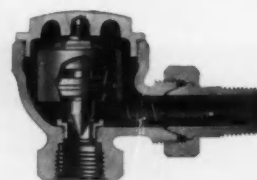
INVERTED BUCKET TRAPS



CONDENSATION PUMPS



VACUUM BREAKER



THERMOSTATIC TRAPS

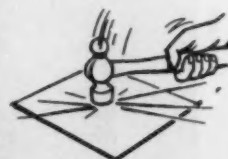
**HOFFMAN SPECIALTY MFG. CORP.** 1700 West 10th Street, Indianapolis 7, Indiana  
SOLD ONLY THROUGH LEADING WHOLESALERS OF PLUMBING AND HEATING EQUIPMENT



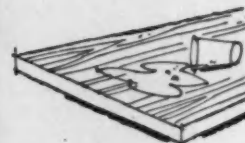
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## Beautiful Marlite Paneling takes years of wear, just minutes of care!

Marlite soilproof finish provides remarkable resistance to scuffs, scratches, heat, and stains. The durable melamine plastic finish seals in Marlite's modern colors and patterns . . . seals out dirt and moisture. And Marlite stays like new for years with an occasional damp cloth wiping. That means lower maintenance costs; elimination of periodic redecorating.

Marlite's wide range of sizes in beautiful Loewy-styled "Companion Colors," distinctive wood and marble patterns, offers unusual flexibility in the design of imaginative interiors. Get complete Marlite details for any application from your building materials dealer, Sweet's File, or Marlite Division of Masonite Corp., Dept. 1205, Dover, Ohio.



that's the beauty of **Marlite**<sup>®</sup>  
plastic-finished paneling

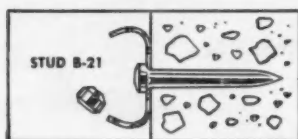
MARLITE IS ANOTHER QUALITY PRODUCT OF MASONITE<sup>®</sup> RESEARCH

Just one of 101 Stud Driver uses!



No outside power source required—

## Anchor wireway section to concrete or steel in seconds with the Remington Stud Driver



**Special Remington "Wiremold"** Section Guard assures accurate placement of B-21 Break-Off Head Stud. 22 caliber Remington Power Load drives stud into concrete or steel... permanently, arrow straight!

Now you can fasten wireway section in a fraction of the time normally required. With a Stud Driver, all you do is squeeze the trigger and the job's done!

This compact, cartridge-powered tool sets both  $\frac{1}{4}$ " and  $\frac{3}{8}$ " diameter studs in concrete or steel... up to six a minute, either size. Barrel change-over takes just 90 seconds, *right on the job*. There are over 40 studs to choose from, plus a selection of 22 and 32 caliber Power Loads scientifically graded to give the *exact* driving force you need.

**TAKE ADVANTAGE** of the economy and efficiency offered by this modern tool. Mail coupon for free booklet.

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**STUD  
DRIVER**

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Please send me your free booklet which shows how I can speed the job and save with the Stud Driver.

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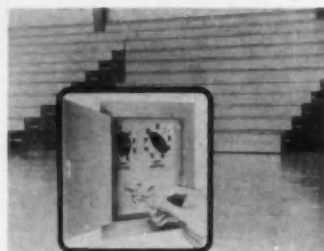


### PRODUCT REPORTS



#### Proprietary Control Panel

Installed as the "nerve center" of Notifier's automatic fire detection or sprinkler supervisory system, the new *Du-O-Matic* proprietary control panel transmits alarm signals directly to a remote station receiving panel. The panels, which are available with from one to 80 circuits, include common equipment, a bell supervisory relay and a fire station tripping device in addition to the sealed plug-in circuits. For one to four circuits power supply is built in; thereafter it is housed in a separate cabinet. Standard 12 by 18 by  $6\frac{1}{2}$  in. cabinets are of gray baked enamel with vinyl windows to reveal designating signal lights. Notifier Corp., 239 South 11th St., Lincoln 8, Nebr.



#### Power-Operated Gym Seats

A new line of power-operated telescopic gym seats features a dial-set key-operated control switch with which the seat sections may be opened or closed by remote control from any convenient location in the gym. Completely self-contained within the seat units, the simple operating mechanism makes it possible to move seat sections independently, and to lock them in any desired position during opening or closing. Installation of the units requires no floor track or special structural conditions, and the seats will operate on any 110 or 200 volt power source. Fred Medart Products, Inc., 3535 DeKalb St., St. Louis 18, Mo.

(More Products on page 226)



**GER-PAK -- THE SHORT WAY TO SAY SUPERIOR POLYETHYLENE FILM**

**GER-PAK**

**VIRGIN POLYETHYLENE FILM**

# Virtually **SEALS OUT** Cellar Moisture and Dust!



Designed  
To Meet FHA  
Requirements



Satisfy yourself and the homeowner with a positive way of preventing moisture and dust from coming up through the basement. Use Ger-Pak film over sub-flooring to seal out unwanted cellar moisture and dust.

All over the country successful builders agree that Ger-Pak virgin polyethylene film is the most effective, versatile moisture-vapor and dust barrier material. In addition to its superior dust-sealing and moisture vapor protection in sub-flooring, Ger-Pak film excels under slab foundations to end wet basement problems, and to reduce sidewall moisture penetration to a minimum.

And that's not all. Ger-Pak film is the ideal material for concrete curing blankets, for protecting equipment and materials from bad weather, for painting drop cloths as well as many other on-the-job uses.

And only Ger-Pak film offers the widest range of widths — from 10-inch for flashing all the way up to 40 feet. Available in clear, black and special opaque white. Ask your dealer about tough, lightweight, easy to handle, and inexpensive Ger-Pak film today.

FREE samples and brochure are yours for the writing.

**GERING**

Virgin Polyethylene Film

GERING PRODUCTS INC., Kenilworth, New Jersey

## Big Gymnasiums and Halls Become 2 or More Rooms



—with  
Custom-Built

# COOKSON

## SIDE COILING PARTITIONS

Cookson Partitions solve gymnasium, auditorium and other big room division problems in the most practical way. Extremely durable and attractive, they are designed with complete flexibility to meet the need for frequent and easy changes in group and room area requirements.

Cookson Partitions give the feeling of permanent structural walls. They may be finished to accent or blend with any decorative plan, yet they roll quickly out of sight for full use of combined room areas. Many exclusive Cookson design and engineering features make this utility partition the most advanced of its type on the market today. Custom built for single openings up to 100' wide, or double openings 200' wide, 23' high. Request Bulletin No. 603 for details.

### THE COOKSON COMPANY

1539 Cortland Ave., San Francisco, Calif.

"Alumilited" Counter Doors  
Rolling Service Doors, "Service" Fire Doors, and Grilles  
Side Coiling Wood Partitions • Specialty Doors

COUNT ON **COOKSON** DOORS... "The Best Way to Close an Opening"

- Your Choice*
- OF COILING**
- ☐ Coil at one side only
  - ☐ Coil equally on each side
- OF TRACK MOUNTING**
- ☐ Under or within lintel
  - ☐ Within ceiling
  - ☐ Beside lintel or beam
- OF COIL BOX MOUNTING**
- ☐ Inside wall
  - ☐ Outside of wall
- OF OPERATION**
- ☐ Electric, remote push-button
  - ☐ Free-rolling push-pull
  - ☐ Removable crank
- OF FINISH**
- ☐ Natural
  - ☐ Stain
  - ☐ Wax or varnish



SEE SWEET'S

### PRODUCT REPORTS



#### Wood Particle Flooring

WoodX, a new wood particle flooring, is said to combine the appearance of cork with the durability of hardwood. Offered in various block or plank sizes, the material forms a highly polished, random grained surface with excellent acoustical and non-slip properties. The blocks are also said to expand and contract vertically rather than horizontally, thus eliminating buckling and shrinkage. L. D. Reeder Co., Dept. A, 2900 Rowena Ave., Los Angeles 39, Calif.



#### Prefabricated Walkway Covers

Low-cost shelter for pedestrian travel through the wide open spaces between and around today's buildings is provided by a prefabricated walkway cover said to permit savings of up to 30 per cent over similar custom-designed units through the use of quantity-produced components which can be quickly assembled and erected at the site. The covers consist of box beams, fascias with built-in drain gutters, and box-V style roof sheets — all cold formed from bonderized-galvanized steel. The fascia can also be had with a white baked-on alkyd enamel finish. Available in widths of 10, 8, 6 or 4 ft and any length required, the covers are supported on 3 in. pipe columns spaced at 8 or 10 ft intervals. Childers Mfg. Co., P. O. Box 7467, Houston 8, Texas.

(More Products on page 230)



These and many, many more incandescent fixtures are included in this new Brascolite Catalog by Guth. A complete working tool, it contains all information needed to figure any incandescent lighting job.

Write on your letterhead for your complimentary copy.

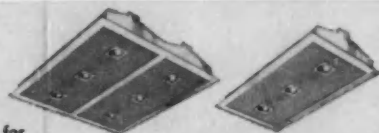


# BY ZEUS!

## these **Guth brascolite** Incandescent fixtures are TOPS!



**SQUARE RECESS UNITS**  
with Holophane and Corning lenses for Intensive, Diffusing, Concave, Convex, Focusing and Asymmetrical distributions.



**SILVER BOWL DIFFUSING** fixtures in 4' x 4' and 2' x 4' sizes with the amazing **GRATELITE Louver Diffuser**®.



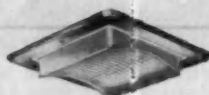
### ALZAK PIN-HOLE RECESS LIGHTS

For intense downlighting—100 watt to 1000 watt sizes in General Service and Silver Bowl lamp types.



### THE ROTATORS

Both **EYEBALL** (shown) and **CONCEALED** rotator. Adjustable recess downlights for PAR and R-lamps.



### CORRIDOR PRISMATIC RECESS FIXTURES

Three types for 2½:1 and 1:1 ratios.



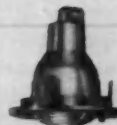
### LONG BOY ELLIPSE

Surface luminaire (also available in recess units). Gives narrow, high intensity beam for indoor or outdoor mounting, or for accent lighting.



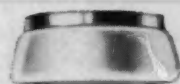
### ROUND CONCAVE RECESS

Also available with Flat or Prismatic glass, and with metal concentric rings or open types.



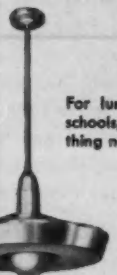
### BABY RECESS LIGHTS

For directional markers, night lights, other minimum intensity installations. Narrow beam or drop-lens types.



### ALZAK HINGED GLASS Drum Units

Hinges on concealed chain for easy relamping and cleaning.



### GRATELITE INDIRECT Pendant Type

For luminous indirect lighting in schools, stores and offices. Something new... and beautiful!

®GRATELITE Louver Diffuser®  
U. S. Pat. No. 2,745,001. Canadian Patented 1957, No. 538,245.

**THE EDWIN F. GUTH COMPANY**  
2615 Washington Blvd. • St. Louis 3, Mo.



# Controlled Environment...

Central Staff Office Building, Ford Motor Company, Dearborn, Michigan. Skidmore, Owings & Merrill, architects, New York; Jaros, Baum & Bolles, mechanical engineers, New York; Bryant & DeWiler Co., general contractor, Detroit.

## Make Certain of Its Rewards *with* Johnson Pneumatic Control

Improved worker efficiency, lower employee turnover and easier recruiting tell only part of the story of modern environment control through air conditioning. Usually, there's much more, depending on the type and use of the building.

One of the essentials of successful environment control is an efficient air conditioning control system, such as the Johnson Pneumatic System in the impressive, new Ford Central Staff Office Building. As the role of environment becomes increasingly important, more and more informed planners are equipping their buildings with Johnson Pneumatic Control Systems.

The reasons make sense. Briefly, Johnson Control is capable of meeting *any* control requirement in any type or size building. The choice of operating features is virtually unlimited—whichever features you need to assure the most efficient air conditioning performance are available. And, equally im-

portant, *pneumatic control does all this with far fewer components, with less supervision and with greater ease of operation and maintenance than any other type of control.*

Johnson, the leader in pneumatic control, will welcome the opportunity to demonstrate how a pace-setting Johnson System, planned and installed to meet your exact needs, can help you make the most of modern environment control. Johnson Service Company, Milwaukee 1, Wisconsin. 105 Direct Branch Offices.

**JOHNSON CONTROL**  
PNEUMATIC SYSTEMS

DESIGN • MANUFACTURE • INSTALLATION • SINCE 1885





Ford wisely puts the accent on comfort, offers working conditions that rate with the best. A specially designed Johnson Pneumatic Control System directs the operation of 54 central fan air con-

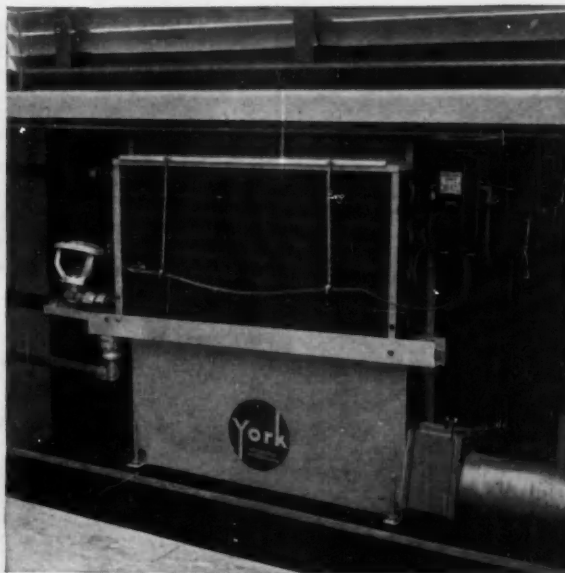
ditioning systems for interior areas and a 3,100-unit induction system serving perimeter offices. Floor area of the building is nearly 950,000 square feet.

## Only a Pneumatic System Can Satisfy Modern Control Requirements So Completely and Efficiently, Yet So Simply and Economically

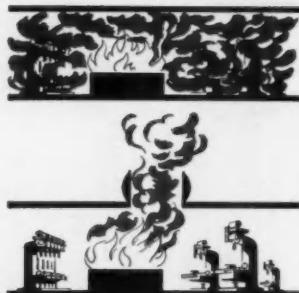
Under-window units offset heat loss or gain from ceiling-high glass wall areas. Controls compensate for variations in outdoor temperatures and exposure in regulating the temperatures of the primary air and water supplied to the room units.



Occupants of each office select their own "weather". Induction units (below) are equipped with Johnson Heating-Cooling Thermostats and Water Valves to apply the final heating or cooling effect to preconditioned primary air.



Keep your  
fire loss  
Down



with the efficient new  
**Swartwout Pyrojector**



... ejects smoke and heat out through plant roof ... reduces fire spread ... guides firemen to fire source.

Pyrojector is an effective answer to fires that billow up and spread under closed roofs. It opens a 28 square foot draft-fed escape vent for smoke and flames. Heat at 212° F. melts a fusible link — releases powerful spring force that opens dampers instantly.

This is a completely new design, with unusual features. Low contour (only 29" above curb), neat appearance. Installs and operates entirely above roof level. Spot it over most likely fire sources, singly or in groups. Or alternate with roof ventilators. Weatherproof when closed. Can be opened for extra ventilation in dry weather. Dampers are double wall construction, insulated. Release mechanism is rugged, positive.

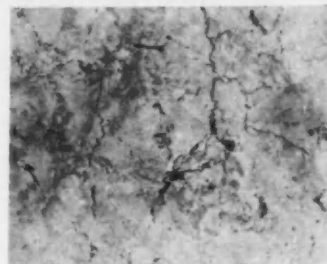
For complete details of this new "escape" ventilation unit, write today for Form 701-G.

The Swartwout Company, 18511 Euclid Ave., Cleveland 12, Ohio

**Swartwout** ROOF VENTILATORS AND VENTILATING LOUVERS

ALSO AUTRONIC PROCESS CONTROL EQUIPMENT

PRODUCT REPORTS



**Marble-Patterned Laminate**

*Travara*, a new marble pattern based on Italian Travertine, has been added to General Electric' *Textolite* line of decorative laminates. The colors — beige and gray with aqua veining, and pink with bronze veining — have been chosen to tie in with G.E.'s appliance colors. Available in sheet sizes up to 4 by 10 ft, the laminate lends itself to both standard and postformed counter and vanity applications. *Laminated Products Dept., General Electric Co., Coshocton, Ohio.*



**Self-Powered Food Conveyor**

The *Touch-n-Go Foodveyor*, a self-powered, variable-capacity food conveyor, promises to help overcome hospital food service problems — high labor costs, dependence on male custodial help and slow meal distribution — caused by heavyweight conveyors. Consisting of a stainless steel conveyor with an integral battery-powered motor, the *Touch-n-Go* unit is operated from the front by pressing a recessed control button at the end of a steering handle. It can be reversed by pressing another control button farther back on the handle, or converted to manual operation by simply depressing a foot pedal. When fully loaded, it moves at approximately 2 mph forward and ½ mph in reverse. The *Touch-n-Go* power drive requires little maintenance and no accessory equipment, and its standard 12 volt automotive battery is charged in daily operation by a built-in recharging unit which operates automatically as the conveyor is preheated or precooled. *S. Blickman, Inc., Weehawken, N. J.*

(More Products on page 236)



**When Keen Vision Is Important...**

**You want the Best Lenses**

**Prescribed for your Glasses...**

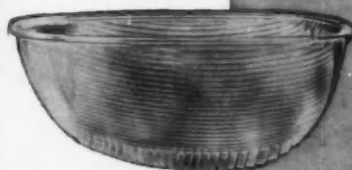
**and**

**HOLOPHANE Prismatic Units**

**Custom-Engineered for your Lighting**

Exact specification is the basis of an optical prescription... The same holds true in planning any form of lighting... Holophane's undeviating precision in manufacturing prismatic products for lighting just can't be duplicated by "rolling" methods. Every Holophane lens is individually **PRESSED** — one by one — on equipment specially built for the operation. It is only by this careful process that we can keep the prismatic patterns precise enough to *direct and control* the light with utmost accuracy. This craftsmanship makes the difference between *specification and approximation*... Holophane **CONTROLENS\***, Reflectors and Refractors are the vital components of *custom-engineered* lighting systems, scientifically designed for the specific purpose... They offer finest quality, consistently predictable performance, and low cost per unit in terms of light delivered.

*To be sure of quality... look for the name  
Holophane impressed in each piece*



For Better Lighting



... Be Specific

**HOLOPHANE**

**COMPANY, INC.** • Lighting Authorities Since 1898  
342 Madison Ave., New York 17, N.Y.

THE HOLOPHANE CO., LTD., 418 Kipling Ave. 30., Toronto 14, Ontario

# 4-story bank sprouts 8 new floors

*and they gleam with Stainless Steel*

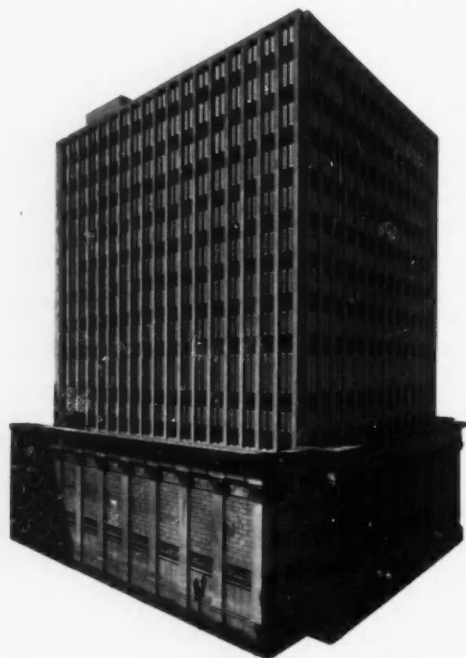
The Federal Reserve Bank of Minneapolis serves the Ninth Federal Reserve District. It moved into its own building in 1925 and, naturally, outgrew its quarters as

the economy of the district expanded. The check collection department, for example, now clears more than 108 million items a year.

So they expanded. Eight new floors were added to the existing four-floor structure. They built with steel cellular floors, and used 16 miles of galvanized steel pipe for the radiant-ceiling heating and cooling system. Exterior walls are covered with limestone and 25,000 square feet of gleaming, non-corroding Stainless Steel spandrels.

The spandrels are deeply stamped with a handsome herringbone pattern that adds texture and interest to the building. The stamping was done with very simple dies, so the panels were low in cost. And, since they are made from Stainless Steel, they will outlast the building itself *without expensive maintenance.*

Stainless Steel is frequently combined with porcelain-enameled steel sheets to form an unsurpassable exterior treatment for buildings. With porcelain-enameled sheets, you can literally use the rainbow for your color guide; and Stainless Steel panels, mullions or trim cannot be equalled for their permanent good looks and durability.



Architects: Larson & McLaren, Minneapolis

General Contractors: Naugle-Leck, Inc., Minneapolis

Panel Fabricator: Benson Mfg. Co., Kansas City

Consulting Architects: Holabird & Root & Burgee, Chicago

USS STAINLESS STEEL • USS VITRENAMEL SHEETS

USS STRUCTURAL STEEL • USS WINDOW SECTIONS

"USS" and "Vitrenamel" are registered trademarks.



## USS STEELS FOR ARCHITECTURAL DESIGN

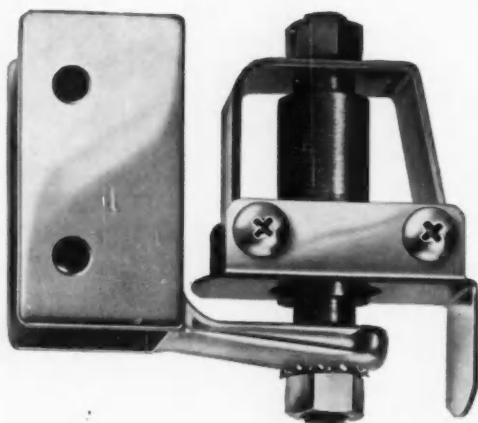


A black and white photograph of a building facade. The facade is composed of a grid of rectangular panels. Some panels are solid dark, while others feature a repeating chevron or zigzag pattern. The pattern is formed by a series of parallel lines that create a three-dimensional, textured effect. The grid is composed of vertical and horizontal lines, creating a sense of order and rhythm. The overall composition is symmetrical and balanced.

UNITED STATES STEEL

**HERE'S  
THE  
*Big* NEWS  
IN  
CONCEALED  
HINGES**

Here's the Nicholson concealed gravity hinge for toilet partition doors that's been making so much news...



**NO COMPLICATED ASSEMBLY REQUIREMENTS** . . . complete unit can be installed quickly and easily at job site.

**NO NEED FOR SPECIAL TOOLS** . . . one adjustment provides for any desired position of door at rest . . . aligns door with adjacent compartments when floor isn't perfectly level.

**NO PROJECTING PARTS** . . . entire unit is concealed within door panel . . . parts are protected against dirt, moisture and vandalism.

**NO LIMITATIONS TO USE** . . . hinge will open or close door in clockwise or counter-clockwise direction, on either right or left-hand posts.

**NO POSSIBILITY OF BENDING DURING INSTALLATION** . . . curled ends of hinge column strap butt solidly against inside of panel . . . panel won't bend inward when bolts are tightened.

**NO SPRINGS TO FATIGUE** . . . double-cam mechanism assures long hinge life . . . self-contained oil reservoir bathes cam surfaces.

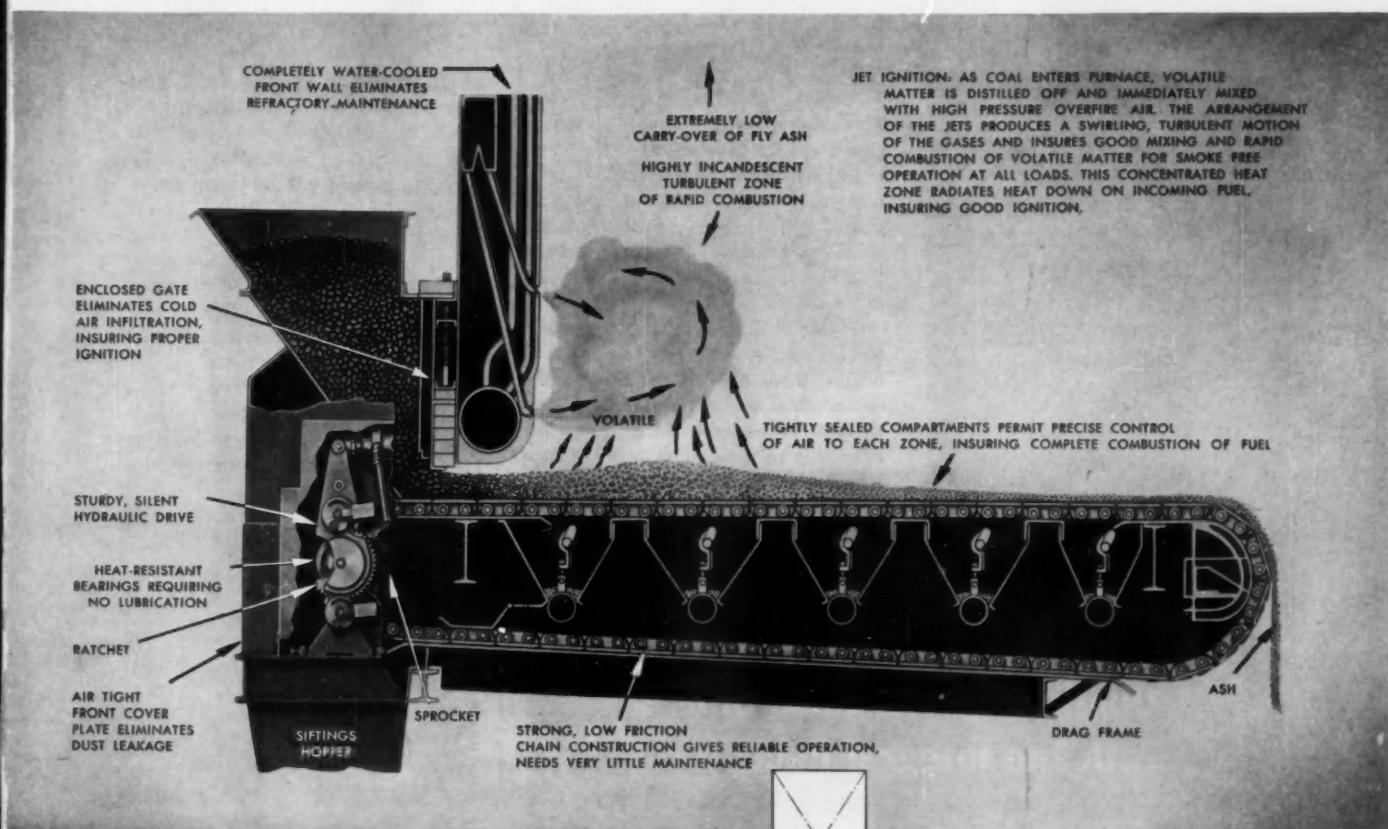
For a gravity door hinge that can save time and money at installation, eliminate trouble and adjustment problems . . . specify Nicholson. W. H. NICHOLSON AND COMPANY, 12 OREGON ST., WILKES-BARRE, PA. Sales and Engineering Offices in 98 principal cities.

**Check these  
important features!**

- fast, easy installation
- simplicity of adjustment
- attractive appearance
- structurally sound
- flexibility of position
- long life



**N** **ICHOLSON**  
of Wilkes-Barre



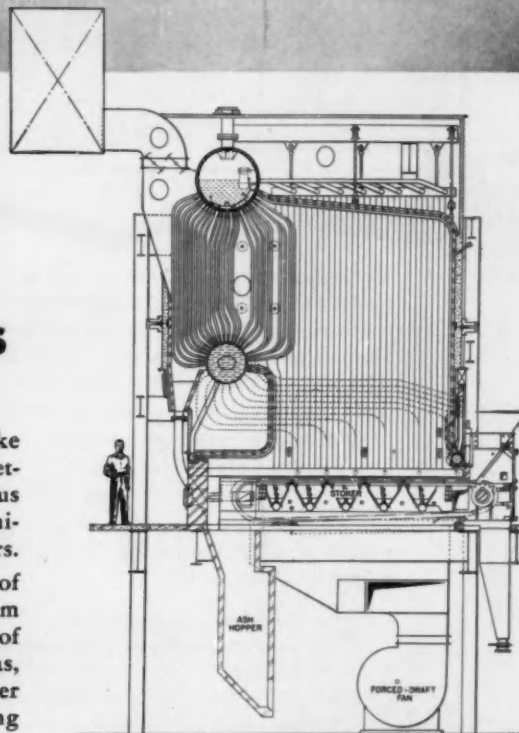
**Latest Unit at University of Rochester  
Will Burn High-Caking Coals**

## **B&W JET-IGNITION STOKER SELECTED TO SOLVE SMOKE AND FLY ASH PROBLEMS**

Stable, efficient combustion over wide load ranges, without smoke and with extremely low fly ash, is achieved by the new B&W Jet-Ignition Stoker when burning bituminous and sub-bituminous coals—including high-caking and coking grades. The Jet-Ignition Stoker maintains a clean stack without using dust collectors.

**Selection** of a B&W Jet-Ignition Stoker for the University of Rochester was made to solve a community relations problem caused by smoke and fly ash. Dr. Lewis D. Conta, Chairman of the University's Division of Engineering, and George D. Haas, Chief Engineer, recommended installation of the unit after observing a commercial installation burning the high-caking coals used by the University.

**B&W Jet-Ignition Stokers** are another of the developments of B&W engineering and research, supported by nearly a century of experience in all phases of steam generation. If your problem is one of excessive smoking and fly ash emission, Bulletin G-85 will tell you how a B&W Jet-Ignition Stoker can help you. And for any problem in steam generation, B&W engineers are ready to help you and your engineers find the solution. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.



**B&W Stirling Boiler with Jet-Ignition Stoker at University of Rochester, designed for 100,000 lb of steam per hr at 125 psi.**

G-831-1B

# **BABCOCK & WILCOX**



**BOILER  
DIVISION**



## PRODUCT REPORTS



### Folding Decorator Screens

The decorative qualities of the shoji screen and the practicality of the venetian blind have been combined in a new traversing decorator screen that Harold W. Grieve, president of the American Institute of Decorators, calls "the first major development in the window-covering field in recent history."

Constructed of three inch squares of molded semi-translucent plastic in a unique three dimensional design, the screens filter sunlight glare into a subtle interplay of light and shadow while admitting air through unobtrusive horizontal vents that form an integral part

of the pattern. When the screen is assembled, the component squares are vertically interlocked with steel rods, and the resulting vertical sections are joined by a simple nylon hinging mechanism. The completed screen, which can be suspended from standard drapery track, folds into a compact stack only one inch thick for each foot of opened screen. Its vertical surfaces reduce cleaning requirements to an occasional vacuuming; its durable construction promises long, trouble-free service.

Although the most obvious application of the *Jaylis* screen is as a permanent covering for large window expanses, it also lends itself to use as a room

another **HAW'S** first...

### One-Piece Fiberglass Unit with Two Integral Receptors



HAW'S again answers the need for more efficient, and attractive deck-type facilities... with this one-piece fiberglass Series 2700, complete with two integral receptors. \* Note the complete absence of rims, cracks, joints—no accumulation of water or grime. This ample 6-foot unit is easily attached to a prepared cabinet frame.

**VERSATILITY!** HAW'S raised, shielded, anti-squirt bubbler is mounted on smaller receptor at right. Larger central receptor may have a pantry goose-neck faucet, or a hot and cold double compression-type faucet. All fixtures are VANDAL PROOF mounted.

**COLOR!** Choose from five decorator colors and white—colors permanently bonded to fiberglass. And the finish is acid and alkali resistant for lifetime durability.



Particularly ideal for satisfying certain local code requirements (i.e. N. Y. State, Conn., Detroit) which specify drinking fountain separate from pantry receptor. **FREE DETAIL SHEETS** sent at your request. Also Series 2500—similar design with both fixtures on single receptor.

HAW'S DRINKING FAUCET CO.  
1441 Fourth St., Berkeley 10, Calif.

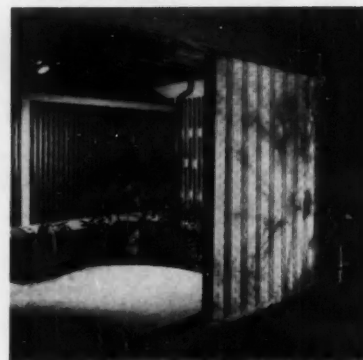
Please send me the following:

- ☐ Detail Sheets for Series 2700.
- ☐ Detail Sheets for Series 2500.
- ☐ Complete new HAW'S Catalog.

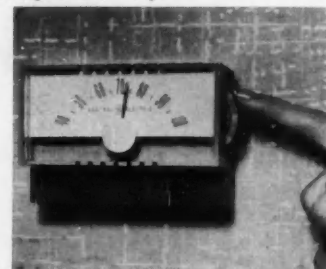
NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_



divider, wall screen, or "door" for storage spaces. The screens can be made in heights up to 12 ft and widths up to 16 ft, and are available in blue, green, pink, yellow, white, and white and ivory. *Jaylis Sales Corp., 514 W. Olympic Blvd., Los Angeles 15, Calif.*



### Straight-Line Room Thermostat

A new thermostat with straight-line appliance styling features bold-face temperature readings that are said to be visible from across an average-size room, and a companion air conditioning control that can be added at any time as a base attachment. Designed to operate with all standard control systems, the heating thermostat and air conditioning base can be mounted on the wall to form a single heating-cooling control unit measuring less than two inches thick, three inches high and slightly over four inches wide. *The General Electric Co., Schenectady 5, N. Y.*

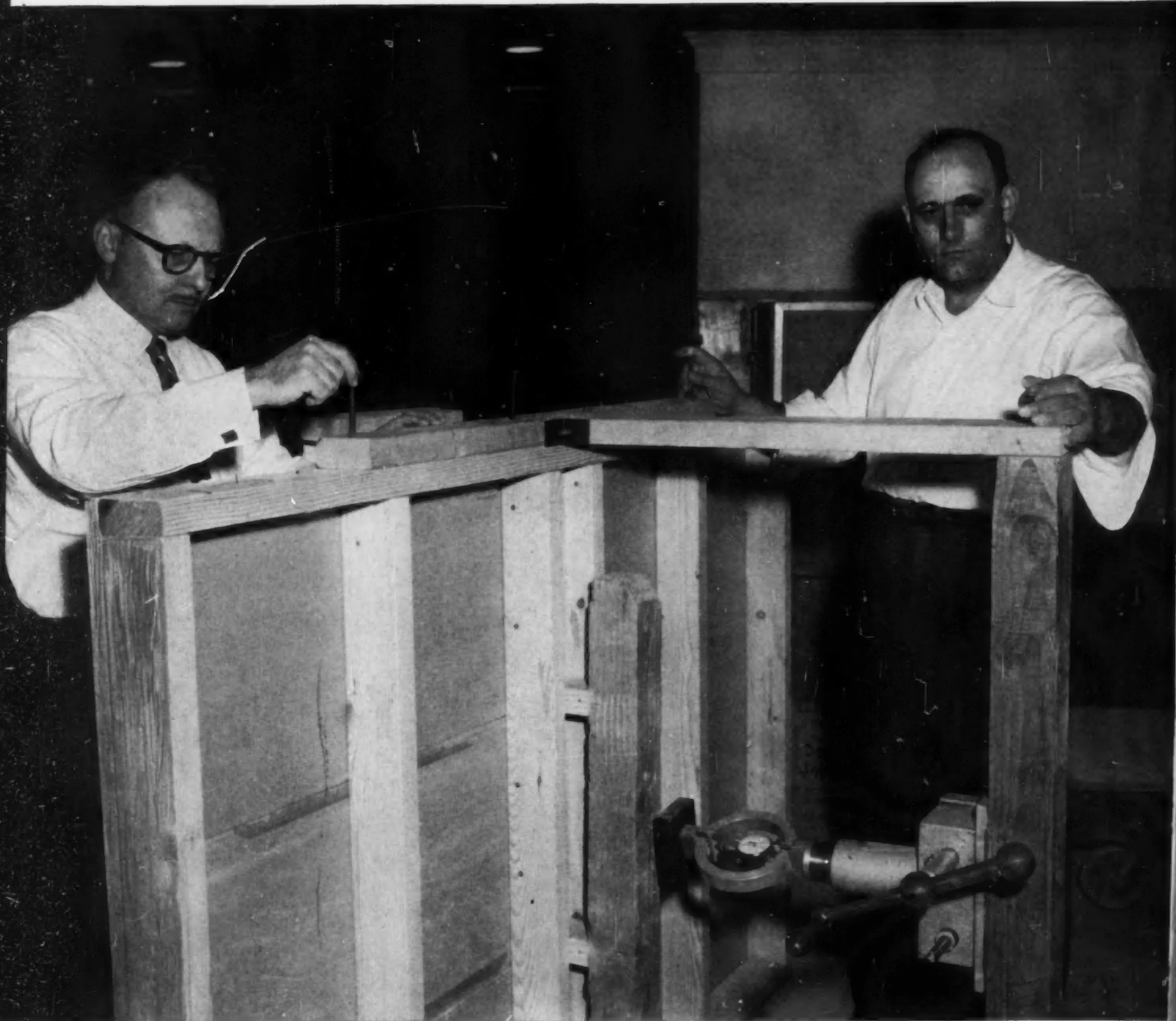


Comparison test of crack  
resistance of four most  
common types of reinforced  
plaster corners

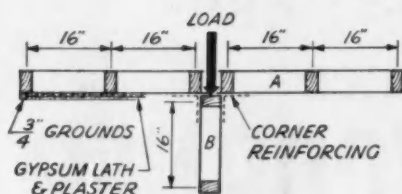
*with New KEYCORNER,  
you can almost double  
crack resistance,  
tests reveal*

[ See next page for digest of test report by  
Research Foundation, University of Toledo. ]

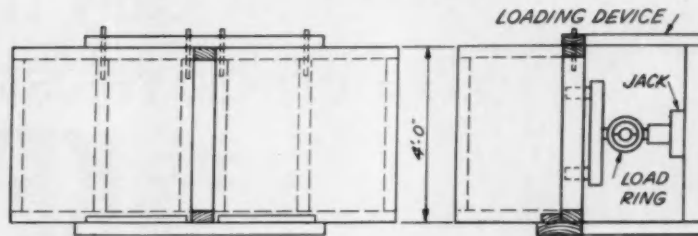
# how crack resistance of plaster corners was tested



*A series of tests on crack resistance of plaster corners was recently completed by Edwin L. Saxer, Professor and Chairman, Civil Engineering Department, Research Foundation, University of Toledo. Here you see the design of the test specimens, and the assembly of the testing equipment.*



TOP VIEW



FRONT VIEW

SIDE VIEW

Wall section A and wall section B held together only by plaster and the embedded reinforcing fastened to the gypsum lath by a few light staples.

Test panels were built so that a measurable force could be applied to the test panel so as to produce direct stresses on the reinforced corners of the specimens.

These specimens consisted of two parts: one, a section of wall 48 inches high and approximately 70 inches long; the other, a similar section, but only 16 inches long.

The construction of the frames and studding, as well as application of gypsum lath, complied with F.H.A. recommended practices.

These two sections were in the shape of a "T" and were

held together only by the plaster and the embedded corner reinforcing. The corner reinforcement was fastened to the lath by a few light staples before application of the brown coat.

At the juncture of the two sections, openings were provided so as to permit the application of loads which forced one section away from the other, thus bringing about a severe cracking tendency at the two interior corners.

Load was applied through a precision screw jack having a capacity of 10,000 pounds, and was

measured by a 6,000 pound capacity proving ring having a sensitivity of 5 pounds.

The magnitude of the load required to produce the first crack was the criterion for evaluating reinforcing. However, all tests were carried beyond this point in an effort to gain some measure of the ultimate capacity of each material. As it turned out, it was not possible to ascertain maximum strength because the specimens failed in some way first, namely pulling the gypsum lath loose from the studding.

## here's what tests reveal

Based upon these tests it is concluded that KEYCORNER lath when embedded in gypsum lath and plaster angles provides better than 1½ to almost two times as much resistance to cracking than any of the other materials tested:

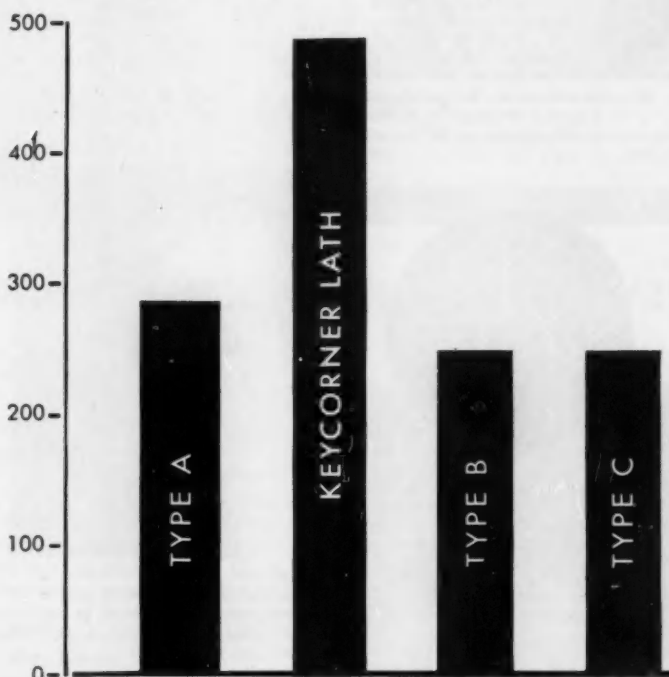
1 The results make it obvious that Keycorner imparts a strength when embedded not present in any of the other products tested.

2 The open mesh design of Keycorner does not impair the bond of the plaster to the lath.

3 The design of the welded wire product imparts only enough strength when embedded to resist cracking up to about one half the loads of the Keycorner design.

4 Reinforcing angles made from 21 ga. wire lath greatly reduce the bond strength between the plaster and the lath under the reinforcing and when embedded resist cracking up to about one half as much load as Keycorner.

5 Even though heavier and with wider flanges, the design of the 3" x 3"—2.5 pounds expanded metal lath cornerite imparts only enough strength to a gypsum lath and plaster angle to carry 59% as great loads, without cracking, as Keycorner lath.



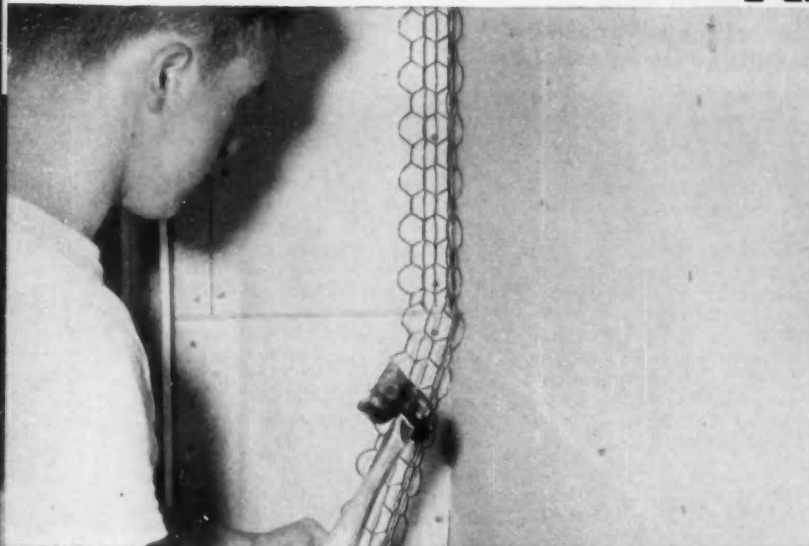
This chart records the results of KEYCORNER, plus those of the other commonly used types of reinforcement tested by Saxer.

They included 3" x 3"—2.5 lb. metal lath cornerite; 2" x 2"—18 ga. welded wire cornerite; 2½ x 2½ meshes—21 ga. galvanized wire.

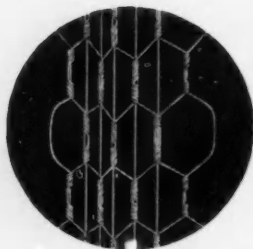
Load Test Data

Type A		(Load-Lb.) First Crack		Type B		(Load Lb.) First Crack	
		1st	2nd			1st	2nd
	Average	300	275		Average	250	250
		288				250	
2"x2"—19 ga. Keycorner	1st	475		Type C	1st	250	
	2nd	500			2nd	250	
	Average	488			Average	250	

see how easy it is to get  
extra crack resistance  
with **KEYCORNER**



*Keycorner comes in preshaped form. It is made in easy-to-handle 4-ft. lengths, or in rolls. When lengths are cut from rolls, the pieces spring into shape to fit corners.*



*Keycorner is galvanized to prevent rusting before use, as well as to prevent rust streaks in the finished wall.*



*Use either nails or staples with Keycorner. For use over doors or windows, or as strip lath, it can be pressed flat to provide a smooth surface for plastering.*



*Four-foot lengths are packed in strong cartons, 1000 ft. per carton. This assures delivery to the job in good condition. Rolls are tight and compact to stand up under normal job abuse.*



*Keycorner is precision shaped to assure proper embedment in the plaster for maximum reinforcing value. It is easy to lap without interfering with plastering.*

#### SPECIFICATIONS

Wire gauge	2'x2'-4' lengths	Shipping wt. per package
	Lineal feet per package	
19	1000	65.5 lbs.
4' wide x 500' rolls		
19	1000	65 lbs.



**Keystone Steel & Wire Company**  
Department AR-127  
Peoria 7, Illinois

Please send me test report on Keycorner.

Name \_\_\_\_\_

Firm \_\_\_\_\_

Business \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

**Keystone Steel & Wire Company**  
Peoria 7, Illinois

Keymesh • Keycorner • Keybead • Keyweld  
Keystone Nails • Keystone Tie Wire  
Keystone Furring Nails • Concrete Nails



## NEPCODUCT

THE UNDERFLOOR  
RACEWAY FOR ELECTRICAL  
FLEXIBILITY

A typical Nepcoduct installation at Ford Motor Company's Dearborn Engineering Center. A type "H" system is installed for the main feeder run. Standard Nepcoduct is used for secondary runs in conjunction with the new type "H" duct. Junction boxes are designed to accommodate both standard and large size ducts.

Architects: Voorhees, Walker, Smith & Smith, N.Y.  
Electrical Contractor: Hall Engineering, Detroit

## FORD standardizes on larger capacity underfloor raceways for main feeder runs . . .

### New National Electric "H" System used in Dearborn Engineering Center and Rawsonville office buildings

A type "H" system, the latest addition to National Electric's standard Nepcoduct Underfloor Raceway line, has been specified by Ford Motor Company. It will provide full electrical distribution throughout floor areas at the new Dearborn Engineering Center and Rawsonville Office Buildings.

Type "H" Nepcoduct, with a cross section of  $1\frac{1}{2}$ " x  $6\frac{1}{2}$ ", has increased capacity to accommodate the large size cable feeds required to serve modern power and telephone facilities. It is especially suited to the growing electrical needs of network teletype, data

processing and extensive communication equipment.

All Nepcoduct components including type "H" can be installed as a one, two or three duct system with large hand hole openings in junction units to provide easy access to power, light and communications systems. Adaptable to any type of floor construction, Nepcoduct makes outlets available wherever they are needed for efficient office layout. Electrical service changes can be made quickly and at low cost to the owner or tenant . . . without interrupting business routine.

When you build, specify NE Nepcoduct to be sure the building will never grow old electrically. Write for complete information today.



Quick and economical to install, Nepcoduct provides separate wiring facilities for light, power, intercommunication and telephone. Streamlined service fittings less than three inches high are provided with standard receptacles of 15 to 50 amperes capacity and with bushed openings for telephone and intercom use.

## National Electric Products

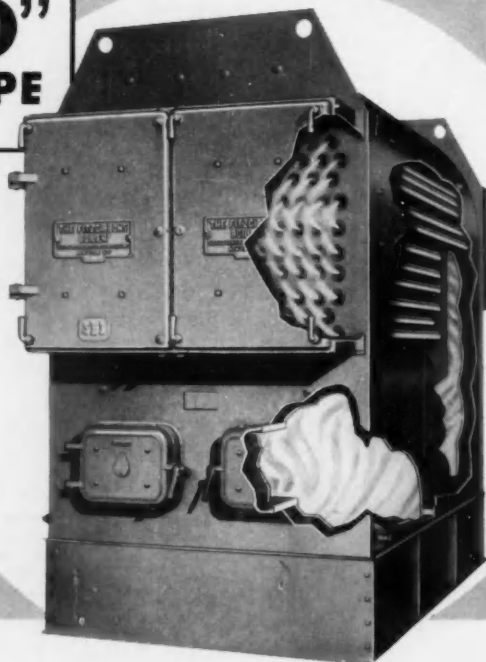
PITTSBURGH, PA.

2 Plants • 12 Warehouses • 41 Sales Offices



# THE *Fitzgibbons* BOILER®

**"D"  
TYPE**



## Efficient Heat Transfer

Ample firebox volume permits any fuel to be burned efficiently. Unimpeded waterways provide rapid circulation and quick absorption of the heat from the fuel. Proper balance between firebox area and boiler tube surfaces assures full transfer of the available heat for highest operating efficiencies.

## Strong Construction

Assembled from quality steel plate in accordance with ASME Code construction requirements by experienced boiler makers. Modern electric welding techniques and manufacturing methods followed by hydrostatic pressure test before shipment assures rugged strength and long life in every Fitzgibbons design.

## Easy to Clean and Maintain

Quick access for cleaning and inspection of all heating surfaces is provided through ample gas and soot-tight doors. Large handhole openings permit water-side inspection. The Fitzgibbons "D" Type Boiler is a result of three-quarters of a century of experience in boiler making.

For catalog data  
on this  
**FITZGIBBONS**  
Steel Boiler,  
write to the  
address below.

***Fitzgibbons***  
**Boiler Company, Inc.**

101 PARK AVENUE, NEW YORK 17, N. Y.

DEPT. 10



## OFFICE LITERATURE

(Continued from page 198)

### Prestressed Concrete Data

Data folder contains literature covering engineering data and technical information on such standard building sections as double tees, channels and joists. *Leap Associates, P. O. Box 1053, Lakeland, Fla.\**

### Curtain Walls

Twelve page brochure illustrates and presents details for custom-designed curtain walls in four basic types. *Newman Brothers, Inc., 670 West Fourth St., Cincinnati 3, Ohio.\**

### Low-Cost Duct System

... for Radial and Perimeter Heating includes design information, detailed specifications and installation plans for *Ceramiduct* underfloor heating systems. 8 pp. *Strailsville Brick Co., New Strailsville, Ohio.*

### Subsoil Investigations for Foundations

Catalog B-7 explains the reasons for making test borings to determine foundation requirements, and discusses the methods used and results obtained. 12 pp. *Raymond Concrete Pile Co., 140 Cedar St., New York 6, N. Y.\**

### Duo-Bed

Fourteen-page brochure details eleven models in the *Duo-Bed* line of dual purpose beds for studio rooms, with a review of special features and accessories. *Duo-Bed Corp., 11617 Wilshire Blvd., Los Angeles, Calif.*

### Sliding Gate Regulator Valves

Bulletin J-SC presents technical data and sizing charts for sliding gate and plate regulator valves. 4 pp. *Jordan Corp., 6013 Wiehe Rd., Cincinnati 13, Ohio*

### Metal Letters

Twelve page catalog illustrates complete line of pattern and tablet letters, including recently introduced Futura, Moderne and Ribbon styles. *Canlon Products, P. O. Box 981, Canton 1, Ohio.*

### Institutional Cabinets for Schools

Contains complete design, construction, specification and feature information on *Kitchen Maid* line of institutional cabinets. *The Kitchen Maid Corp., Andrews, Ind.*

\* Other product information in *Sweet's Architectural File, 1958*

(More Literature on page 248)



Bethlehem High-Strength Bolts join structural members in new home of Chicago Sun-Times. Owner: Field Enterprises, Inc.; Architects-Engineers: Naess and Murphy; General Contractor: George A. Fuller Company.

## Newsplant in Chicago has high-strength bolting

The new home of the Chicago Sun-Times is one of the most modern newspaper plants in the country. The aluminum curtain wall structure, on the north bank of the Chicago River, is nine stories high, and has a penthouse. Its total floor area is approximately ten acres.

The erection of the 6,400 tons of steel framework for this attractive building proceeded smoothly and quietly, using thousands of Bethlehem High-Strength Bolts to connect the structural members.

Bethlehem High-Strength Bolts save time in erecting steelwork because they can be installed quickly by means of a pneumatic impact wrench and holding wrench. Each bolt is used with two hardened washers, one placed under the head, the other under the nut. With this method, tight, sound joints are possible in a matter of seconds.

**OTHER ADVANTAGES OF HIGH-STRENGTH BOLTS**  
High-strength bolting, a much quieter form of construction than riveting, is highly desirable for school and hospital zones. And since the bolts are installed cold, there is no fire hazard involved. Moreover, where power tools are unavailable, the bolts can be tightened with hand spanners.

Bethlehem High-Strength Bolts are made of carbon steel in popular sizes, and are quenched and tempered to meet the requirements of ASTM Specification A-325. For full details, get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

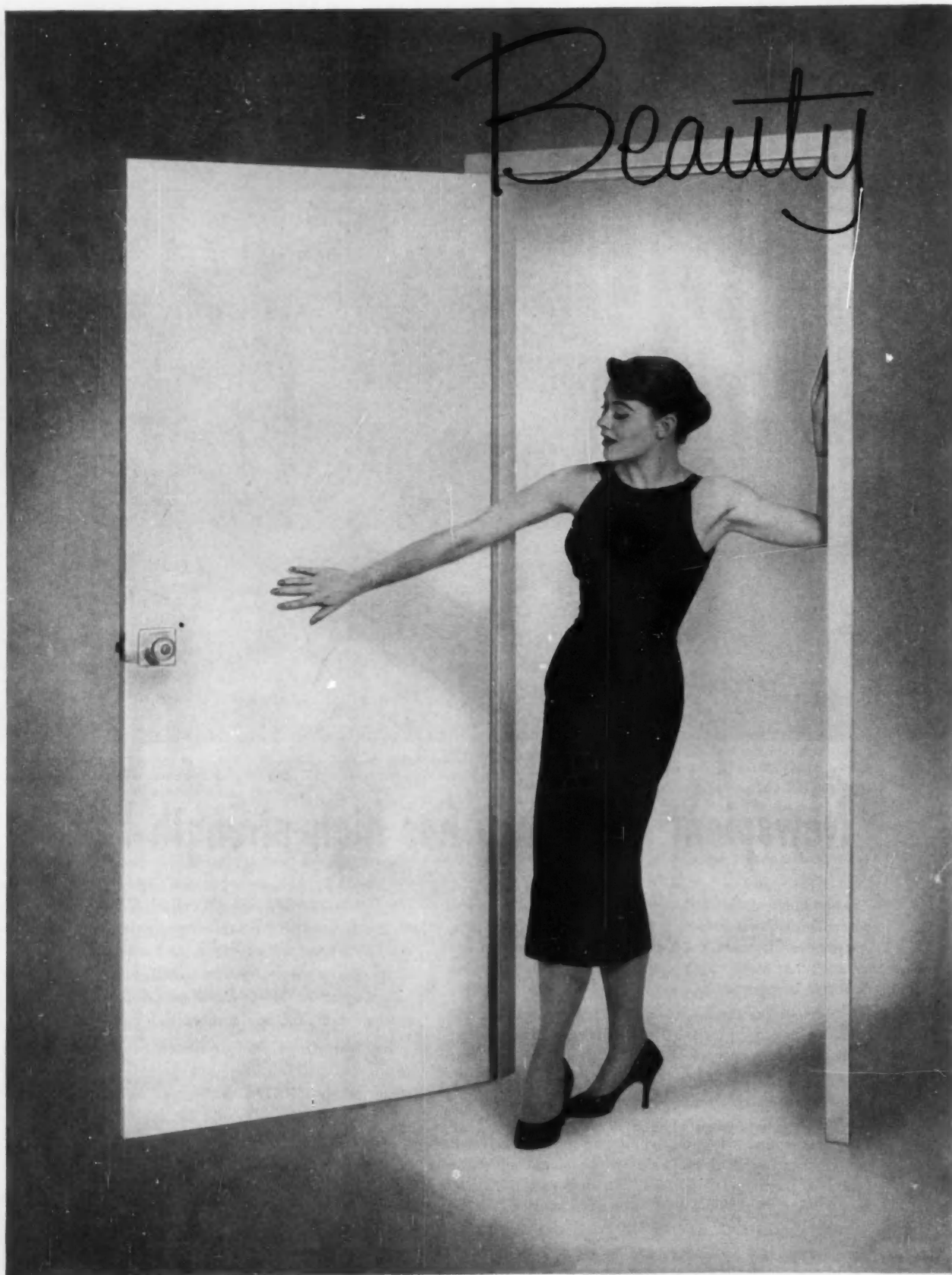
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL





# Beauty



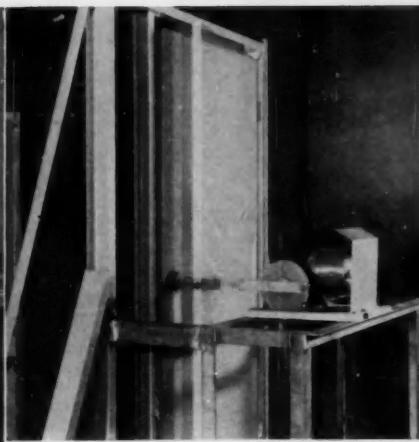


# and the Beasts



## Twist!

Here the "beast" (a jack) forces one corner of the door off the table until the insides begin to snap. The Fenestra Door took 240 lbs. of twisting pressure without damage! One *competitive* door snapped at 90 lbs., another at 130.



## Slam!

Here the "beast" (a door slamming machine) has already slammed the Fenestra Door 382,000 times! No damage to door or hinges. *Competitive* doors shook loose hours before.



## Bang!

Here the "beast" (a pendulum weight with a force equal to 1200 inch-pounds) crashed against this door 1000 times without even leaving a mark! One *competitive* door gave way after 50 blows, another after 100.

## New Fenestra 1 $\frac{3}{8}$ " Hollow Metal Flush Doors outlast all others in torture tests!

Beneath the sleek "seamless" beauty of the new 1 $\frac{3}{8}$ " Fenestra® Hollow Metal Flush Door is a rigid, rugged structure that withstood the toughest torture tests shown here.

This strength comes from Fenestra's exclusive multi-rib reinforcement.

And here are three other important extras:

1. You buy a *complete package*: door, frame, hardware. All fitted at the factory for fast, economical erection.

2. Fenestra's famous Lock Miter joint frames provide extra strength and smooth finished appearance.

3. You buy these custom-quality doors at *stock* prices. Fast delivery is standard.

Call your local Fenestra representative—listed in the Yellow Pages—or mail the coupon below for complete information.

**Fenestra**  
INCORPORATED

HOLLOW METAL  
DOOR-FRAME-  
HARDWARE UNITS

YOUR SINGLE SOURCE OF SUPPLY FOR  
DOORS • WINDOWS • BUILDING PANELS

### Fenestra Incorporated

Dept. AR-12, 2252 East Grand Boulevard,  
Detroit 11, Michigan

Please send me complete information on New Fenestra  
1 $\frac{3}{8}$ " Hollow Metal Flush Door-Frame-Hardware Units.

NAME \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_



Even in Cold or Humid Areas...

## *Fenestra* FENLITE Windows NEED NO PAINTING

Moisture is murder on most metals. But here's a discovery that protects steel in a way never before possible. It's an amazing new process called FENLITE that completely protects Fenestra® Steel Windows *without painting*. Yet Fenestra Steel Windows with FENLITE cost no more than ordinary steel windows with two-coat field painting!

It takes eight separate steps, completely controlled with electronic precision, to complete the exclusive FENLITE process. The lifetime zinc "surface" actually becomes part of the basic steel structure of the windows. Then a special treatment "passivates" and chemically polishes the zinc for even longer life and a gleaming, attractive

finish. When put to the toughest test of a standard 20% salt-spray exposure, this treatment resists the start of corrosion 3 to 12 times longer than ordinary zinc "coating." FENLITE also prepares the window for a tight glazing compound bond and for *decorative* painting, if you desire.

An illustrated-in-color brochure is prepared to fill in the details on FENLITE for you. Why not call Fenestra's nearest representative today? He is listed in the Yellow Pages. Have him visit you at your convenience and bring a sample of FENLITE Finish for your close inspection, or mail the coupon below today.



The Fenestra FENLITE Finish is also available on the complete line of Fenestra Industrial Steel Windows for manufacturing and commercial buildings.

*Fenestra*  
INCORPORATED

FENLITE  
INTERMEDIATE  
STEEL WINDOWS

Your Single Source of Supply for  
DOORS • WINDOWS • BUILDING PANELS

*Fenestra* Incorporated  
Dept. AR-12, 2252 East Grand Blvd.  
Detroit 11, Michigan

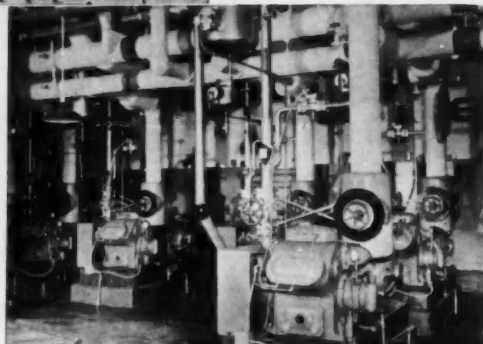
Please send me more information on Fenestra FENLITE Intermediate Steel Windows.

NAME \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_



Famous Neil House of Columbus, Ohio, chooses Vilter Air Conditioning to provide their guests with controlled comfort year 'round.

Shown are the five Vilter six-cylinder ammonia compressors which provide most of the refrigeration. Other Vilter equipment includes: evaporative condensers, Pakicer, for their ice requirements in kitchen and bottle beverage room service, shell and tube brine coolers to supply cold brine for the kitchen refrigerators and cold storage rooms, and air conditioning units. Complete automatic control is provided.



## Famous Convention Hotel Enjoys VILTER Air Conditioning

● The Neil House, one of the outstanding convention hotels of the nation located in Columbus, Ohio, believes wholeheartedly in the drawing powers of air conditioning. A satisfied Vilter customer since 1939, it has continued, through the years, to extend its air conditioning facilities . . . Vilter units being specified in each case.

Prominent among Vilter equipment are the feature-packed VMC ammonia compressors which are installed in the power plant across the street—their compact design insures more capacity in less space . . . assure lower maintenance cost because of interchangeability of components . . . provide efficient, economical performance, guaranteed for a long life. Your refrigeration dollar buys more in a Vilter VMC.

Installed on the roof of the power plant are Vilter Evaporative Condensers. They save you 90 to 95% in water costs . . . provide low pumping costs, eliminate waste water disposal problems, and may be installed indoors or out. Vilter Evaporative Condensers mean lower cooling costs.

See your nearest Vilter distributor for engineering assistance in designing an air conditioning and refrigeration system to your needs.

Write to The Vilter Manufacturing Company,  
Dept. O-704, 2217 S. First Street,  
Milwaukee 7, Wisconsin,  
for helpful literature.

**Vilter**<sup>®</sup>  
REFRIGERATION and AIR CONDITIONING



Bulletin 732  
Vilter Evaporative  
Condensers



Bulletin 631  
Vilter  
Uni-Chillers



Bulletin 429  
Vilter VMC  
Freon Compressors

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

Air Units • Ammonia & Freon Compressors • Booster Compressors • Soudolot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakicer & Polarflake Ice Machines

### OFFICE LITERATURE

#### Fire Door Frames for Thin Walls

Bulletin of Research No. 49 reports on investigation conducted to determine the performance of steel door frames with fire doors installed in 2 and 2½ in. solid non-bearing partitions. 20 pp. *Underwriter's Laboratories, Inc., 207 East Ohio St., Chicago, Ill.*

#### The Science of Decorating Schools

Discusses factors to be considered in decorating school interiors and gives complete "how to do it" painting plans and specifications. 24 pp. *Luminall Paints, National Chemical & Mfg. Co., 3617 S. May St., Chicago 9, Ill.\**

#### Vinyl-Metal Wall Panels (A.I.A. 23-L)

Describes, illustrates and gives specifications for *Clad-Rex* laminated wall panels of semi-rigid vinyl permanently bonded to aluminum or steel sheet. 8 pp. *Clad-Rex Corp., 2101 S. Indiana Ave., Chicago 16, Ill.*

#### Low Level Sound

Twenty-page catalog presents complete product information and specifications for *Lowell* low level sound equipment, including baffles, mounting accessories and intercom equipment enclosures. *Lowell Mfg. Co., 3030 LaCade Station Rd., St. Louis 17, Mo.\**

#### Fire Alarm Systems

Revised catalog presents comprehensive information on selecting and installing *Autocall* fire warning systems for all types of property. 46 pp. *Adv. Mgr., The Autocall Co., 57 Tucker Ave., Shelby, Ohio \**

#### Bradley Duo-Washfountains

(A.I.A. 29-H) Bulletin K-1204 describes and illustrates principal features of newly designed *Duo-Washfountains*. 4 pp. *Bradley Washfountain Co., Milwaukee 1, Wisc.\**

#### Heifetz Design Gallery

Introduces new and varied line of contemporary lamps and lighting fixtures featuring *Rolaflex* plastic diffusers. *The Heifetz Company, Clinton, Conn.*

#### CL Commercial Huckbolt Fasteners

Includes technical data and complete dimensional information for full line of *Huckbolt* fasteners. 12 pp. *Huck Mfg. Co., 2480 Bellevue Ave., Detroit 7, Mich.*

\* Other product information in *Sweet's Architectural File, 1958*





Home Office Building: American Hardware Mutual Insurance Company  
Minneapolis, Minnesota

Architects and Engineers: Thorshov and Cerny, Minneapolis

Consulting Engineer: A. C. Godward, Minneapolis

General Contractor: Johnson, Drake and Piper, Inc., Minneapolis

Stainless Steel Fabricators: Crown Iron Works Company, Minneapolis

Stainless Steel by: Republic Steel Corporation, Cleveland,  
and other producers

**Picture Story of**  
**ARCHITECTURAL ACHIEVEMENT WITH STAINLESS STEEL**



**THE AMERICAN HARDWARE MUTUAL INSURANCE BUILDING** in Minneapolis consists of two main elements: (1) a four-story modular office unit and penthouse; (2) a wing combining auditorium, employee dining facilities and garage.

In design and construction of the building, care was taken to select materials requiring minimum maintenance. That is one reason for the large amount of stainless steel (over 100,000 pounds in the curtain wall construction) used throughout the building. Heat-strengthened glass spandrels, windows and vertical marble column facings are set in a framework of stainless steel that provides extremely lightweight construction.

A specially designed elastic mounting for the panels, devised by the architects and stainless fabricators, allows for Minnesota's extreme temperature variations ranging from  $-34^{\circ}$  to  $+108^{\circ}$ F. This design utilizes the springlike quality of stainless, as well as its exceptionally high strength-to-weight ratio. The result is a leak-proof wall, no greater than three inches thick, that absorbs any movement caused by expansion or contraction.



**STAINLESS HARMONIZES** with and complements other construction materials. In the lobby area, Republic ENDURO Stainless Steel is used for elevator doors, moldings and fluted wall panels. The softly finished metal enhances the beauty of the Monte Verde marble floor and Italian Cippolino marble walls. Yet it does not compete for attention.



**STAINLESS IS STRONG**, tough and corrosion-resistant. That is why it was selected for both indoor and outdoor stair railings and guard panels. This view shows how the architects blended the functional beauty of railings made from welded stainless steel tubing and guard panels of heavy stainless mesh with steps of multi-colored terrazzo and walls of light colored glazed brick. All railing fittings and fastenings are stainless.



**STAINLESS STEEL PENTHOUSE** houses elevator and air-conditioning equipment, the board of directors room and a lounge for informal meetings. The penthouse exterior is of long-lasting, rust-resisting stainless steel for minimum maintenance. It will not discolor with age. Will never need painting. Floor-to-ceiling stainless steel framed windows afford a pleasant view of Lake Calhoun and landscaped surroundings.

**STAINLESS IS FUNCTIONAL** as well as decorative. This view of a corner of the main floor lobby and reception room shows floor to ceiling windows framed in stainless steel. Louvered box molding along floor houses a finned-tube radiant heating system. ENDURO Stainless Steel was selected for the molding because of its high resistance to corrosion.



**STAINLESS IS IDEAL FOR FOOD PREPARATION**, handling and serving equipment. It is easy to clean and keep clean. It keeps maintenance costs low and employee morale high. These are a few of the reasons for its widespread use in the kitchens of hospitals, schools and business buildings like American Hardware Mutual's. Republic offers architects competent metallurgical and engineering help in obtaining the best possible results with ENDURO Stainless Steel.



**STAINLESS STEEL CURTAIN WALL** and glass construction mirror the building's park-like surroundings in this view of the one-story wing housing the employee's dining room and cafeteria. The unusual angular design of the terrace railing was achieved by the architects through the use of welded stainless steel tubing.

**STAINLESS STEEL GARAGE AND SERVICE DOORS** will withstand constant use and abuse. The wear-resistance and abrasion-resistance of stainless makes this installation a particularly functional use of the metal. Complete details and specifications on Republic ENDURO Stainless Steel for architectural applications are contained in Sweet's File, or can be obtained by sending coupon below.



## REPUBLIC STEEL

*World's Widest Range of Standard Steels  
and Steel Products*



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**3110 EAST 45TH STREET • CLEVELAND 27, OHIO**  
 Please send more information on ENDURO® Stainless Steel for architectural applications.

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 Company \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zone \_\_\_\_\_



In summer 701 General Electric *Thinlines* air condition all 232 apartments in the Elkins Park House, Elkins Park, Pennsylvania. In cold weather the same units act as convectors for the central heating system.

## General Electric Air Conditioners Double as Hot Water Convectors in 232-Apartment Building

"We certainly saved money by specifying General Electric *Thinline* air conditioners for the Elkins Park House," says Aaron Colish, architect.

"*Thinlines* not only give us efficient cooling, but these attractive units also double as forced air convectors for our hot water central heating system. They were easy to install right through the wall. And each General Electric *Thinline* has its own automatic thermostat, so temperatures

in each room can be individually controlled."

This air conditioner that's a heater, too, is just one of a whole line of efficient, economical General Electric *Thinlines* designed to meet every building requirement.

Why not see how much money you can save with *Thinlines* in your next building. See your General Electric distributor for full details. General Electric Company, Appliance Park, Louisville 1, Kentucky.

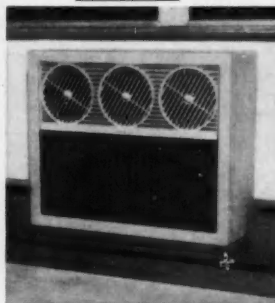
**Here's how easy it is to install General Electric *Thinlines* right through the wall—**



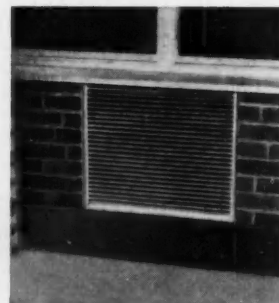
**During construction** *Thinline* sleeve is built through wall. Panel protects opening until building is complete.



**When building is finished,** *Thinline* mechanism slides easily into sleeve. Then hot water lines are connected.



**On the inside** this handsome appearance front is screwed to chassis. It's all you see of the efficient *Thinline* unit.



**On the outside** the *Thinline's* aluminum grille blends neatly with the building—can be painted if desired.

*Progress Is Our Most Important Product*

**GENERAL  ELECTRIC**

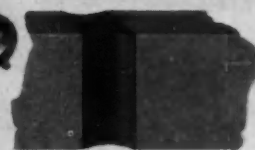




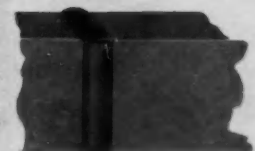
*new*

## **HORNFLEX**

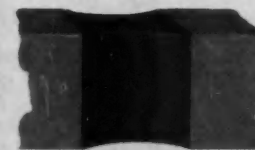
*sealant solves  
movement and  
temperature problems  
in curtain wall joints.*



**NORMAL**



**50% COMPRESSION**



**100% EXPANSION**

Movement due to winds and extremes of temperature poses one of the most trying problems for the designer of curtain wall buildings. For not only must the joint material seal out water, it must be flexible as the building moves with the wind and its elements expand and contract with heat and cold. Too, unequal coefficients of expansion of different materials create additional joint stresses.

Hornflex Thiokol® LP-32 Compound is especially effective in curtain wall construction for sealing joints between panels of stainless or enameled steel, aluminum panels and glass in needle-point glazing. The squeeze-stretch range of Hornflex absorbs exceptional stress without loss of bond! It provides an elongation of 325% and stays firm and elastic over a temperature range from 50°F BELOW ZERO to 250°F.



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SUBSIDIARIES AND DIVISIONS

**Sun Chemical Corporation**  
10th Street & 44th Avenue, Long Island City 1, N. Y.

Plants: Houston • Long Island City • Los Angeles • San Francisco • Toronto  
Sales offices and Warehouses throughout the United States and Canada

Laboratory test and job applications indicate that Hornflex, properly installed, will provide excellent protection for periods up to 25 years and more.

Other uses for Hornflex are to fill and seal surface joints in bridges, highways, swimming pools, etc. It has excellent bond to other building materials including those of dissimilar surface density and structure. Hornflex does not oxidize or absorb moisture; effectively seals joints against air, dust and water.

Hornflex is supplied in a pleasing shade of grey which blends well with aluminum, stainless steel or concrete. It is also available in red, aluminum, white and black.

Like complete details? Call your local Horn representative or write for Hornflex Technical Bulletin to Dept. H56-1215.

\*A registered trade mark of the Thiokol Chemical Corp.

#### **DIVISIONS OF SUN CHEMICAL CORPORATION**

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## THE RECORD REPORTS

### ON THE CALENDAR

#### December

- 1-4 Annual convention, National Swimming Pool Institute — Shamrock-Hilton Hotel, Houston
- 1-4 American Municipal Congress, annual conference of American Municipal Association — Sheraton-Palace and St. Francis hotels, San Francisco

- 1-6 Annual meeting, American Society of Mechanical Engineers — Hotel Statler, New York
- 4-5 Building Research Institute Correlation Conference, "Adhesives and Sealants in Buildings" — Shoreham Hotel, Washington, D. C.
- 11-12 National Construction Industries Conference, sponsored by Armour Research Foundation; theme, "Creative Trends in Structural Design" — Chicago
- 18ff The Architecture of Antoni Gaudi,

an exhibition prepared under the direction of Henry-Russell Hitchcock — Museum of Modern Art, 11 W. 53rd St., New York; through February 23

#### January

- 19-23 Annual convention and exposition, National Association of Home Builders — Chicago
- 27-29 Annual meeting, American Society of Heating and Air-Conditioning Engineers — Pittsburgh
- 27-29 Home Improvement Products Show — Hotel Sherman, Chicago
- 27-30 Plant Maintenance and Engineering Show — Chicago
- 30ff Annual meeting, Society of Architectural Historians and College Art Association — Washington, D. C.; through February 2

#### February

- 4-6 13th annual technical and management conference, Reinforced Plastic Division, Society of the Plastics Industry — Edgewater Beach Hotel, Chicago
- 9-12 Eighth annual convention, Mason Contractors Association of America — Sheraton Park Hotel, Washington, D. C.
- 11-12 Meeting of Building Research Advisory Board; "think session" to focus on building industry problems and long-range solutions — National Academy of Sciences-National Research Council Building, Washington, D. C.
- 18-20 Conference on Church Building, sponsored by the Department of Church Building, National Council of Churches, and the Church Architectural Guild of America, in cooperation with the Detroit Council of Churches — Veterans Memorial Building, Detroit
- 22-26 Regional convention of the American Association of School Administrators — St. Louis
- 25-28 Annual convention, American Concrete Institute — Morrison Hotel, Chicago
- 26-28 National convention (first of three in 1958), American Society of Civil Engineers — New York City



### One Good (School) Leads To Another

"Rilco laminated-wood beams were an extremely successful part of the structure" in keeping the bid below the budget, says the architect. The beams saved time — "roof framing over one 10-classroom wing was erected by three pair of men in four days." And the inherent beauty of wood meant economy for "the laminated-wood beams were left exposed throughout the school." And the "town approved . . . we are now building another similar 20-room school."

But appearance and economy aren't the whole story. Rilco beams, arches and Rilco wood deck mean fire safety for schools, churches, industrial and commercial buildings.

There's a cost-saving Rilco member for every type of structure — engineered to your specification. For more information contact your nearest Rilco office.



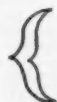
Memorial elementary school, Burlington, Massachusetts  
Architects: Edgar T. P. Walker and Theodore B. Hanna, Boston  
Contractor: Joseph Rugo, Inc., Boston



Gymnasium beams are 22 ply with 53'2" span  
Classrooms have 28'11" x 5 1/4" x 14 1/2" beams



**RILCO LAMINATED PRODUCTS, INC.**  
W818 First National Bank Building  
Saint Paul 1, Minnesota



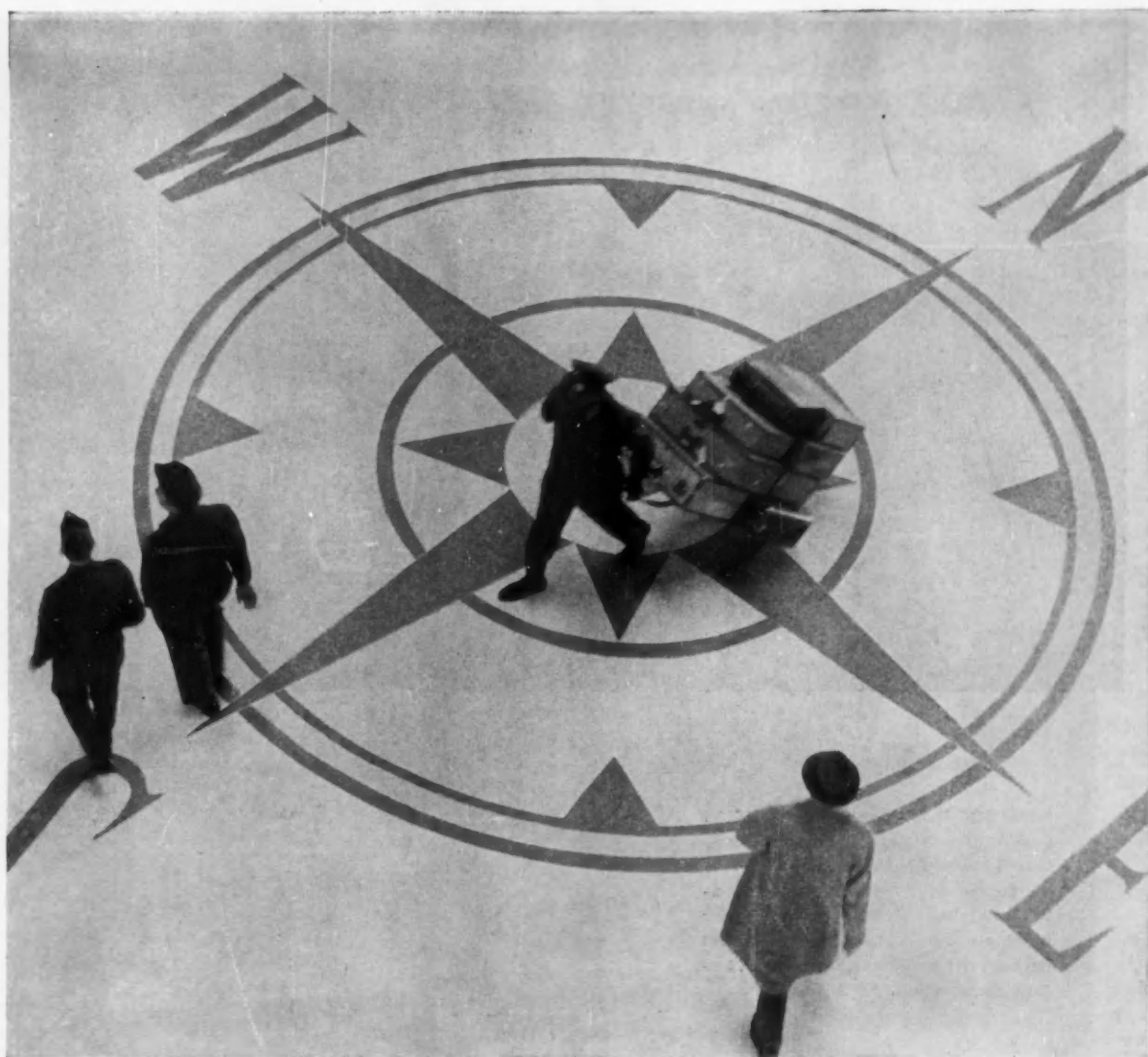
District Offices:  
Fort Wayne, Indiana  
Newark, New Jersey  
Tacoma, Washington

### OFFICE NOTES

#### Offices Opened

- Harold Richard Ames, A.I.A., has announced the reopening of his office for the practice of architecture at 2020 University Ave., Madison 5, Wis.

(Continued on page 260)



SECTION OF LOBBY, GREATER PITTSBURGH AIRPORT. • ARCHITECT: JOSEPH HOOVER, PITTSBURGH, PA. • PHOTO BY LEONARD SCHUGAR FROM GAMMA

## Wings for your imagination with Terrazzo under foot

**T**ERRAZZO allows your imagination free play, permits you to accomplish enduringly beautiful installations without creative restrictions. Terrazzo is timeless, the perfect vehicle for contemporary settings, aesthetically appropriate to classic design, rewarding for the architect whose ideas it faithfully reproduces.

From the point of view of the man who pays for it, Terrazzo is equally satisfying: Richly, permanently beautiful, inexpensive to maintain, easy to keep clean, capable of absorbing the toughest kind of wear for years without end. For detailed information, write the Association in Washington, D. C. Free AIA Kit upon request. Catalogued in Sweet's.

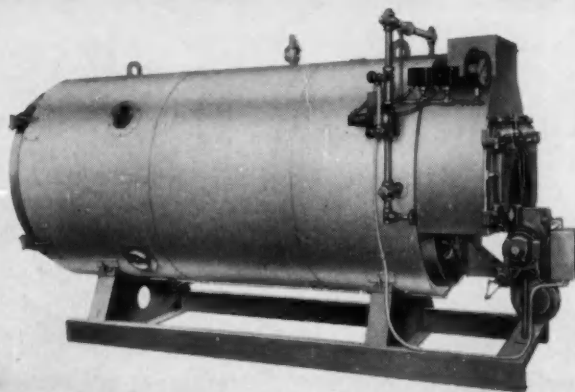
THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION  
404 Sheraton Building, 711 14th Street, N. W., Washington 5, D. C.

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## 18 TO 92 HORSEPOWER

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NEW 606,000 TO 3,060,000 BTUH CAPACITIES: Forced-draft package teams low pressure Kewanee Scottie Jr. Boiler with Iron-Fireman Micro-Mist Oil Burner. Exclusive burner principle completely atomizes and carburets No. 5 or lighter fuel oil before combustion.



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*Now... 8 popular sizes are available in both high pressure and low pressure models.*

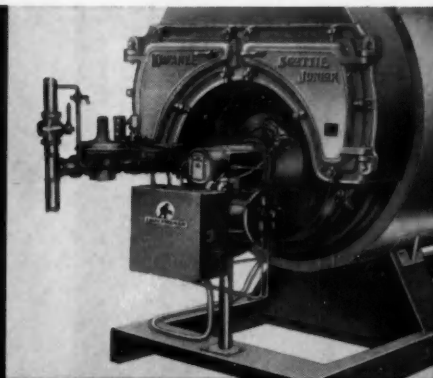
*Forced-draft firing* keeps combustion air supply constant, regardless of location or atmospheric conditions. Vent pipe only is needed—eliminating added cost and unsightliness of a stack.

*Fuel flexibility* is offered by proved burners built on exclusive principles to completely carburet either light or heavy oils. Gas and gas-oil combination units are also available.

*Kewanee factory-assembles the entire unit before shipping.* Boiler is fitted with burner and controls at factory. Fire-tested if desired. Package is shipped complete—or if job conditions require, the burner may be field mounted at a later date.

*The coupon at right brings complete information.* Mail it today to your nearby Kewanee Man, or to: AMERICAN-STANDARD, KEWANEE BOILER DIVISION, 101 Franklin Street, Kewanee, Illinois.



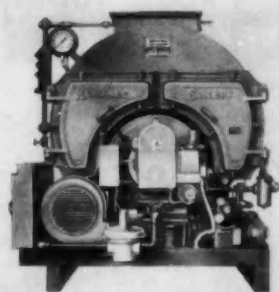
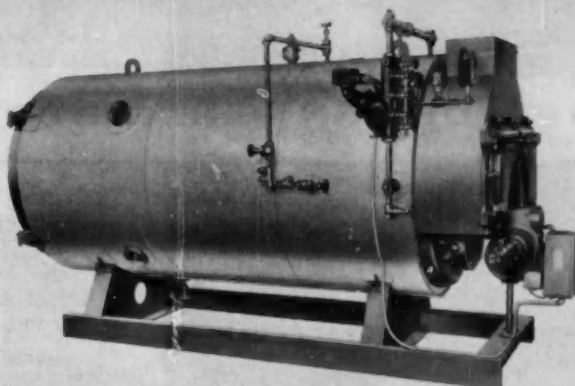


GAS-OIL COMBINATION FIRING in the new Kewanee-Iron Fireman package series is provided by the Iron Fireman Model C-240-GO Combination Gas-Oil Burner, with simple valve control for fuel changeover.

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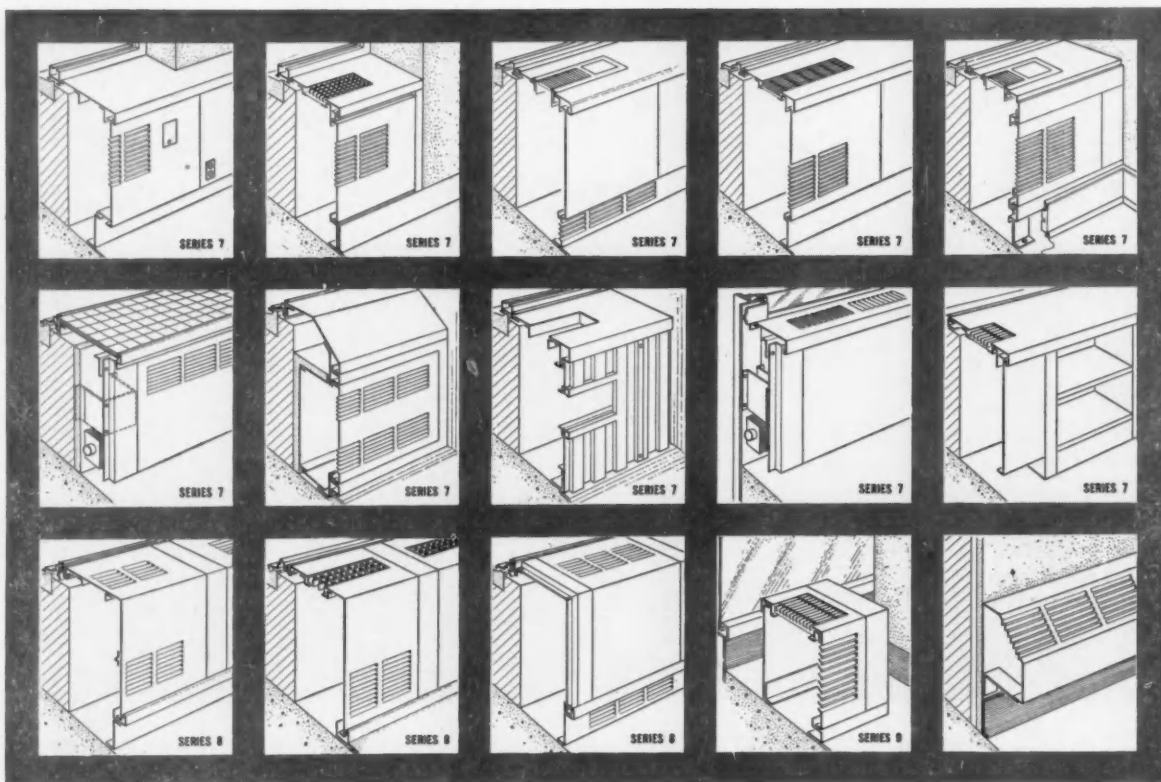
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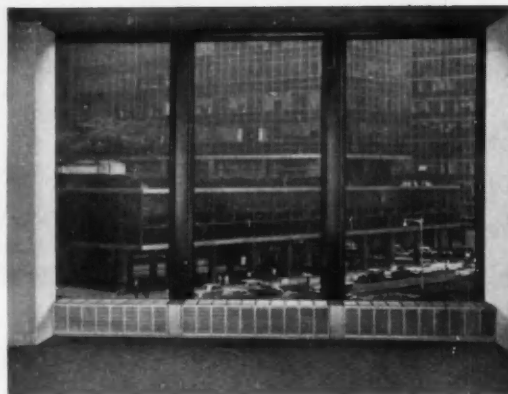


## AMERICAN-Standard

KEWANEE BOILER DIVISION

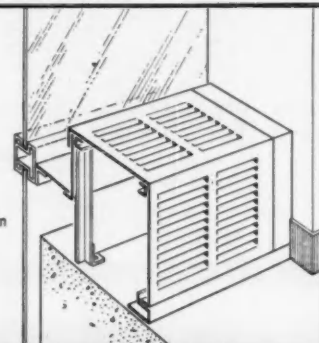


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## THE RECORD REPORTS

(Continued from page 254)

- Theodore T. Boutmy, A.I.A., announces the opening of his office at 45 Castle Street, San Francisco 11, Cal.
- A. Robert Broadfoot Jr., A.I.A., announces the opening of his office at 5557 Arlington Road, Jacksonville 11, Fla.
- Announcement has been made of the opening by Richard S. Morehouse, A.I.A., of offices in The Professional Building, 114 Waltham Street, Lexington, Mass.
- Joseph H. Rudd, A.I.A., has opened offices at 602 Hughes Building, 115 Southwest 4th Avenue, Portland 4, Ore.
- Frederick Saphier, A.I.A., announces the opening of new offices at 200 Fourth Avenue, New York 3, N. Y.
- Robert B. Sherman, Architect (formerly Sherman & Whitney, Architects)

announces the opening of his office at 101 East Miller Street, Newark, N. Y.

### Firm Changes

• Carl Lloyd Ames, Architect, formerly a partner in the dissolved partnership of Ames-Bischoff, has opened offices at 3709 West Fond du Lac Avenue, Milwaukee 16, Wis., under the firm name of Carl Lloyd Ames and Associates. T. J. Bischoff, Architect, the other former partner of Ames-Bischoff, is now associated with the firm of Charles Nagel & Associates, Consulting Engineers, 1615 Underwood Ave., Milwaukee 13, Wis.

• William P. Kramer, architect, and Samuel J. Gates, Engineer, former partners in the dissolved firm of Gates, Weiss and Kramer, have announced the opening of separate offices at 611 North Broadway, Milwaukee 2, Wis.

• Welton Becket and Associates, Architects and Engineers, San Francisco, has announced the appointment to its executive staff of Wallace V. Cunneen Jr., a former vice president and board member of The Cunneen Company, Philadelphia.

• Pereira and Luckman, Architects and Engineers, Los Angeles, has announced the appointment of George W. Coleman, structural engineer and lawyer, as assistant director of engineering.

### New Addresses

F. W. Beaudry, Consulting Engineer, 2613 West North Avenue, Milwaukee 5, Wis.

Edward H. Glidden Jr., A.I.A., 170 East 25th Street, Baltimore.

Robert G. Jahelka, A.I.A., Architect, and William Henry Peck, A.I.A., Associate, 2020 Northeast 17th Court, Fort Lauderdale, Fla.

Robert Zion-Harold Breen, Site Planners-Landscape Architects, 302 East 41st Street, New York 17, N. Y.

### CORRECTIONS

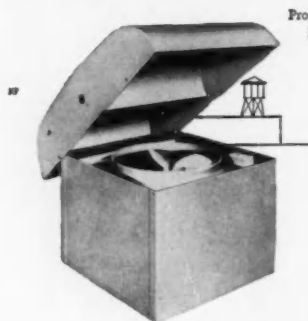
Flag House Courts, Baltimore, one of the prize-winning projects in the Seventh Biennial Baltimore Association of Commerce Architectural Awards Contest (AR, Oct. 1957, page 12) was the joint design of Alexander S. Cochran Associates and Wrenn, Lewis and Jencks. The RECORD regrets its error in reporting the credit.

In the story on the recommendations for the extension of the U. S. Capitol, the figure for contemplated underground parking (Oct. 1957, page 388) should have been 1900, not 19,000.

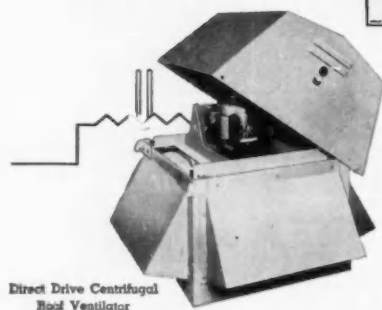


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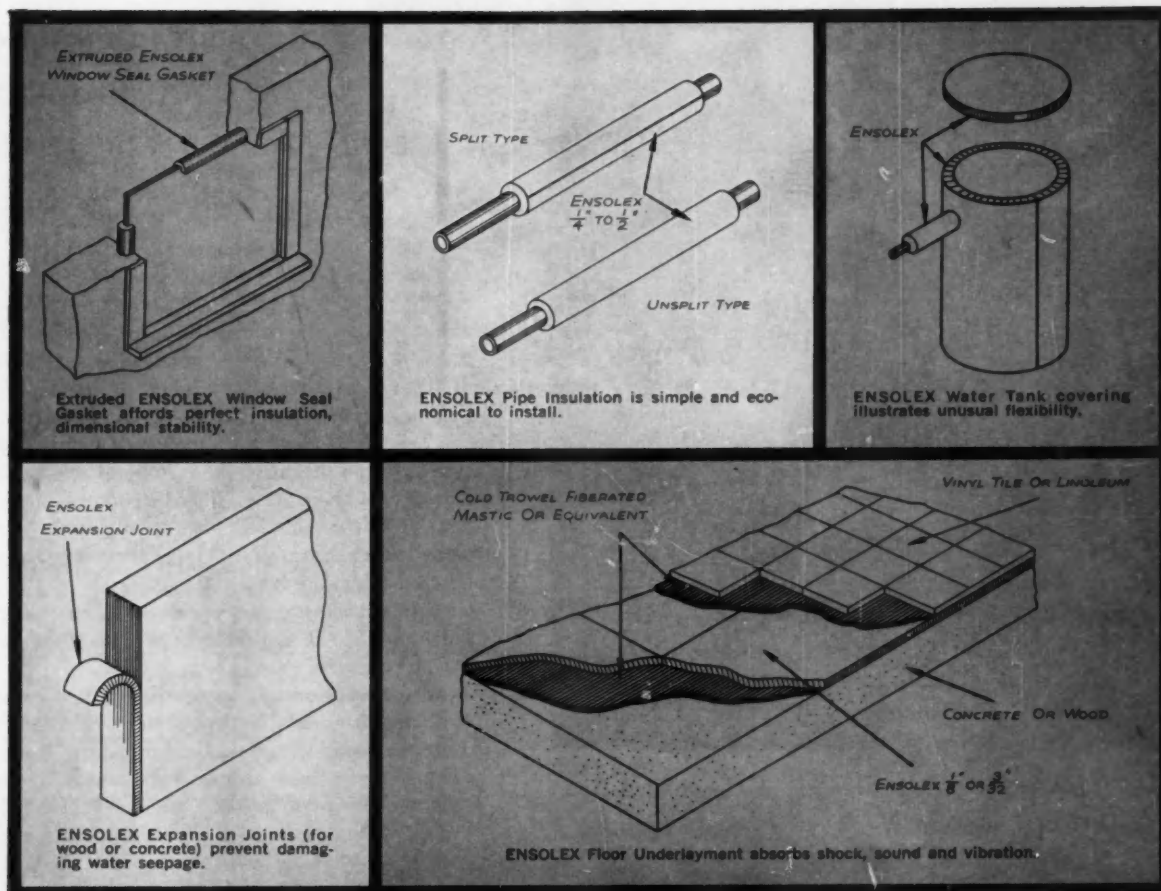


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#### ARTHUR T. DOOLY MEMORIAL CHAPEL

New England Deaconess Hospital, Boston, Massachusetts

This chapel is 24' x 51' in size, with seating capacity of 50. It also contains a reception room and chaplain's office. Glulam A-frames spaced at 8'-6" and anchored to concrete buttresses provide the structural framing. Heavy timber decking applied over glulam purlins remains exposed as the finished ceiling. Center height is 31'-8½".

Architect: Gustav A. Hagen, Boston, Mass. Contractors: Scott, McNeilly and Son, Boston.



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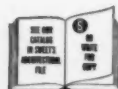
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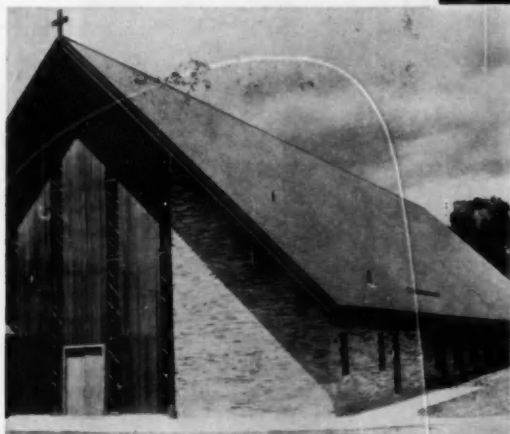
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**CHURCH OF PHILIP THE APOSTLE, Clifton, New Jersey (above)**

This sanctuary, with seating capacity of 800, is part of a complete religious center which also includes a rectory, convent, and a school of ten classrooms, multi-purpose room, library and recreation center. Glulam arches of 55'-4" span are spaced at 12 feet; outlookers extend the roof to provide aisles outside the arch legs on both sides of the church. Heavy timber decking serves as finished ceiling. Cost, including curbs, sidewalks and paving, averages \$14.86 a square foot.

Architect: Arthur Rigolo, Clifton, New Jersey.

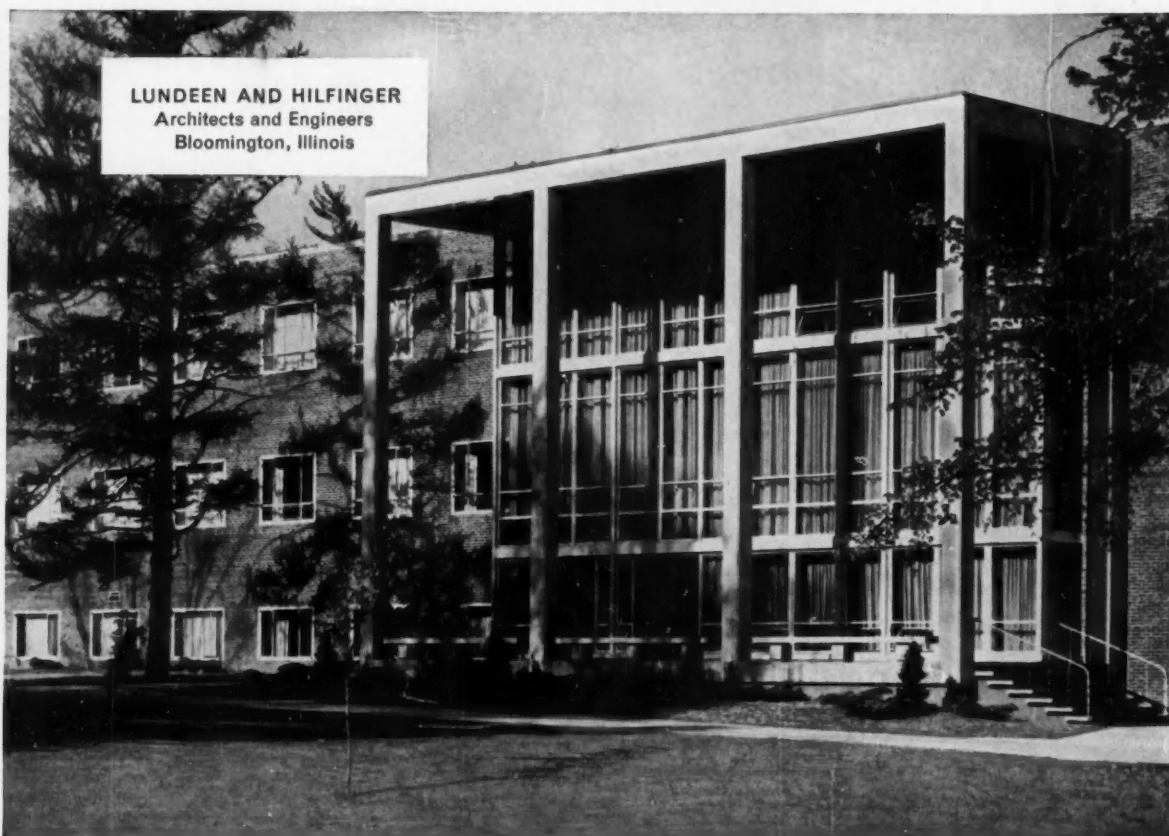
Contractor: Romagnino Construction Company, Inc., Cliffside Park, New Jersey.

**CHURCH OF THE HOLY NATIVITY, Aiea Haina, Hawaii (below)**

Informal in character to match its setting, this church uses native stone for walls and glulam timber arches for support of the roof structure. In addition to the sanctuary which seats 380 worshippers, the church includes a children's chapel, nursery, kindergarten, classrooms, meeting room, offices and storage areas. Total floor area is 15,806 square feet, built at an average of \$12.43 a square foot.

Architects: Law and Wilson, Honolulu, T. H. Contractor: Robert R. Hadano, Honolulu.





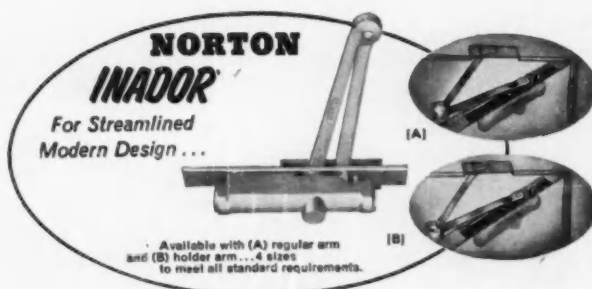
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## P E R S P E C T I V E S

(Continued from page 9)

a building expressing or accommodating worship by three faiths in a satisfactory way and not being the fully studied building it might have been, it uses a construction method which is strong and appropriate to achieve a very expressive chapel.

— John MacL. Johansen, Architect

Three generations of architects and engineers have struggled with the expressive range of new structures as technology has introduced these; in that long effort there have been some brilliant and many happy results. The Air Academy Chapel as presented in your September issue is not likely to be counted among these. I respect the architects' goals, admire their fortitude under attack. If only they had succeeded better I would willingly cheer more than their principles. Overlooking some unhappy but no doubt inconsequential details, the

interior spaces seem more pleasant than the exterior; no Congressman has yet done justice to that, and indeed the first published version seems preferable.

— Edgar Kaufmann Jr.,  
Writer and Critic

The Chapel is in the tradition of the great churches of Europe. It has the recognizable elements which one associates with such religious buildings. The polyhedrons which form the structure, laced together and spaced to permit the penetration of light into the nave through the stained glass interstices, give the visual satisfaction of vital, dynamic forces brought under control and in balance. Rising from the bold, clearly expressed buttress-like foundations to the serrated silhouette at the ridge, they lift the spirit. The resulting form and color of the interior should receive a reverent response from the worshipper.

The materials, structure and method of fabrication are as much a product of our day as the Air Force itself. Together they form a distinguished concept of a religious center for the Air Academy.

— Roy F. Larson, Architect

At the time of the Congressional debate on the Air Force Academy two years ago, I made a public statement in support of the Air Force's plans designed by the firm of Skidmore, Owings & Merrill (see *Architectural Record*, August, 1955, page 18).

It is not necessary here to repeat it, except to reiterate that each creative age has its own architectural language, and that it is as absurd for us today to use the architectural style of some past age as it would be to conduct Congressional debates in Greek or Anglo-Saxon.

Insofar as present Congressional criticisms argue a return to the Classic, Gothic, Renaissance, or any other historic style, they may be rejected as wrong in principle.

We must use our own architectural language. It is true that language can be used with skill and feeling to create — say — a great and moving speech in the House; or it can be used in a monotonous, pedestrian fashion; or a downright awkward and ungrammatical way to make mediocre or poor speeches.

Similarly, our own modern or contemporary style in architecture can reveal a great range of creative talent. Not all of it will be good, and not all of it will please all tastes. It has always

(Continued on page 272)

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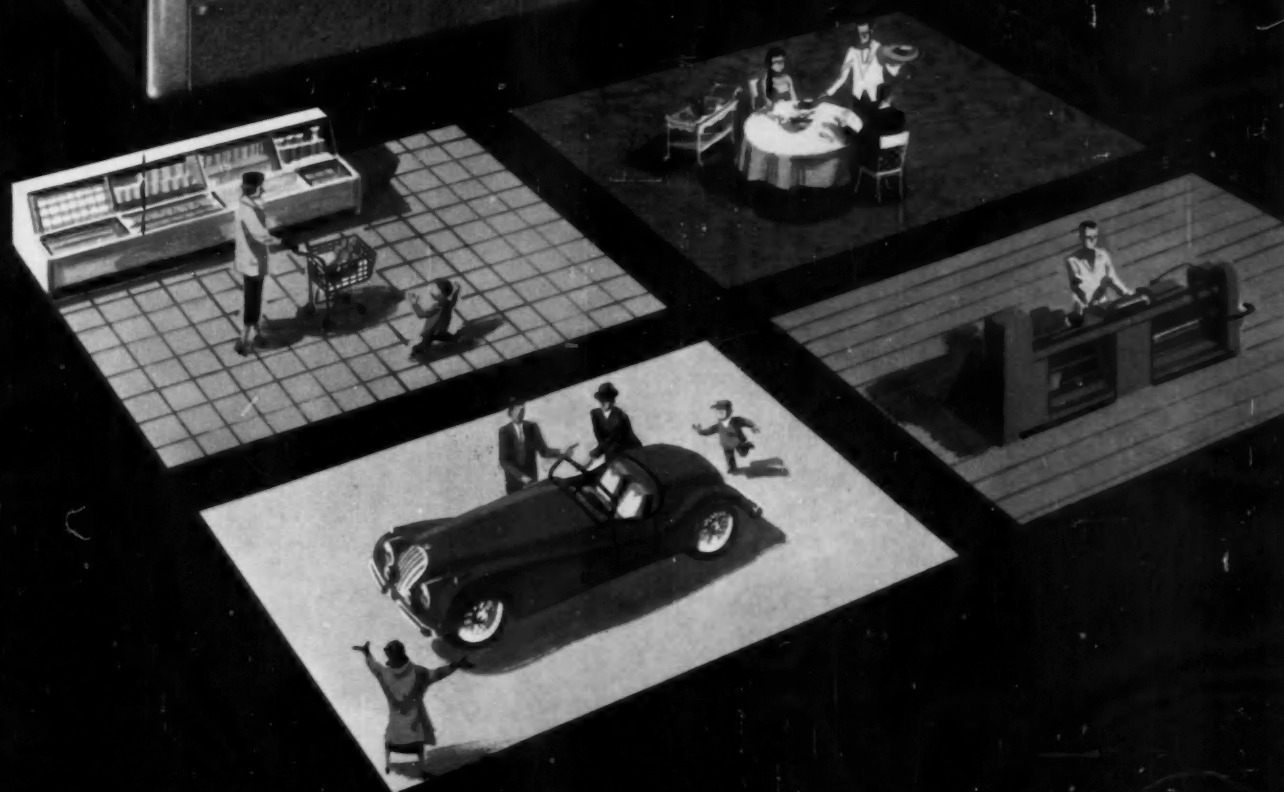
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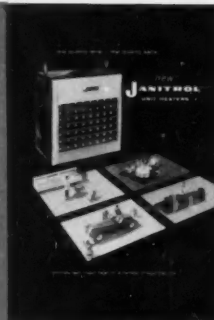
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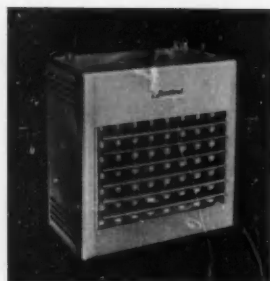


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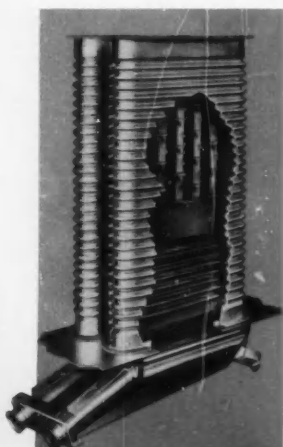
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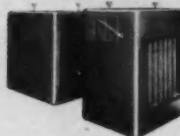
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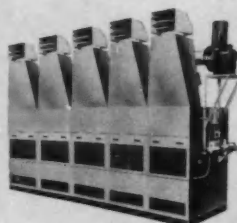
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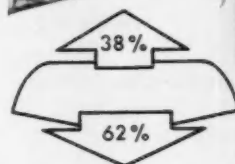
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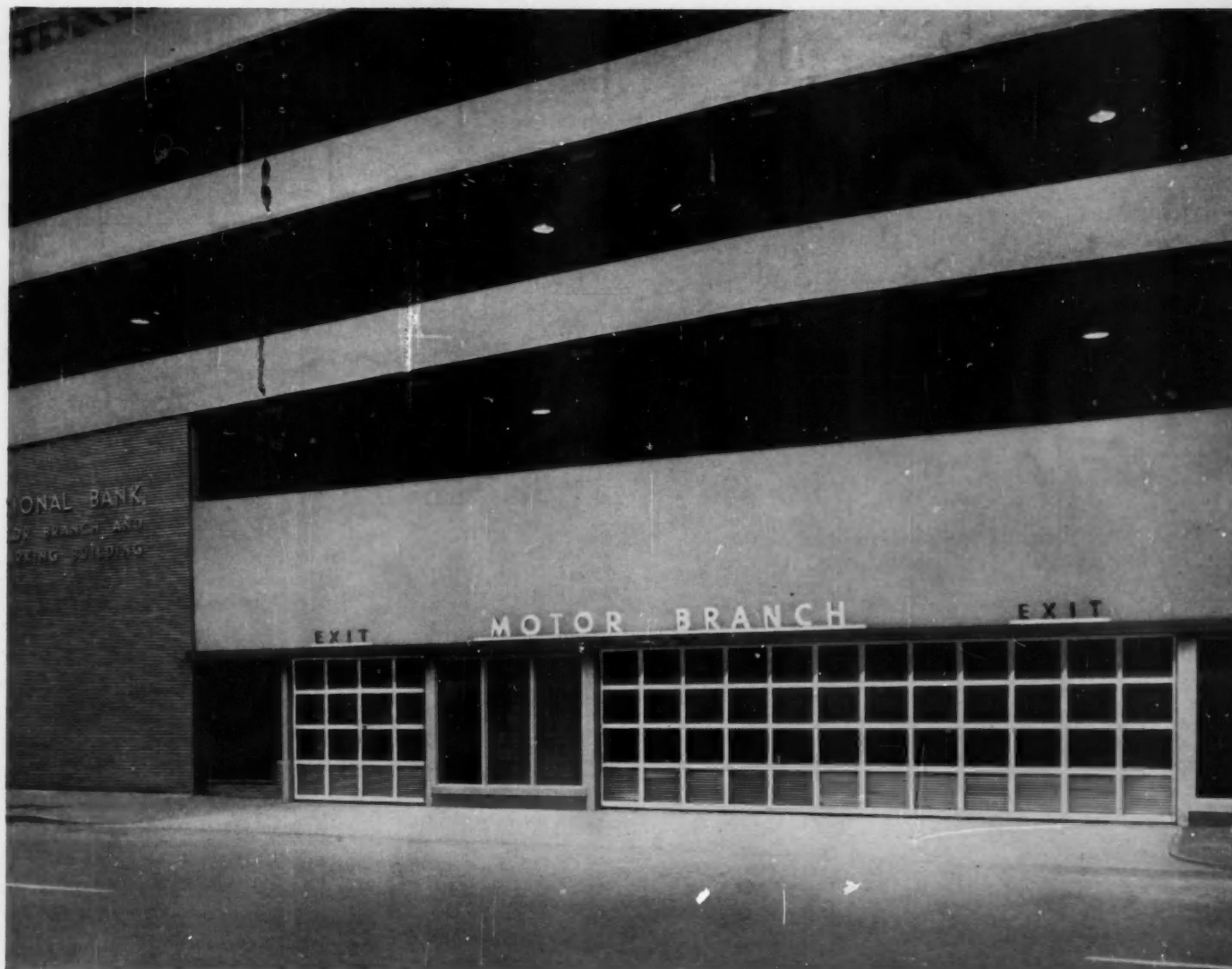
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Architectural

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## P E R S P E C T I V E S

(Continued from page 266)

been so in the past. Witness all the controversy and turmoil, the bitter committee criticisms, that accompanied the building of the U. S. Capitol.

I do not myself find all aspects of the new chapel design pleasing. To me the uniform succession of sharp-pointed forms on the skyline lacks climax, and

it is too brittle and nervous. The building suggests a centipede in rapid motion. Neither does it harmonize with the mountain skyline as well as did the earlier design — which was also criticized.

On the other hand, the structural conception is brilliant, and I believe the interior space, color and diffusion of light would be of great charm and serenity.

The placing of the large Protestant chapel above, and the smaller Catholic and Jewish chapels in the basement is

open to question. Would it not be wiser to make all three chapels, architecturally, of an interfaith character so that portable ritual furniture would permit the use of any one in accordance with varied requirements of use and congregational size?

The main point is that you can't legislate beauty. Any more than you can legislate good oratory. The Air Force, after long search and consultant opinion, has selected what is almost universally recognized as one of America's leading architectural firms. They may not please all of us; they may not create a masterpiece for the centuries; but they've got a better chance of doing so than a collection of too many cooks stirring too much broth. Would Congress send a committee to the Mayo Clinic to tell it the best treatment for appendicitis?

— **Hugh Morrison, Chairman, Department of Art and Archaeology, Dartmouth College**

The proposed design for the Air Force Academy Chapel seems to me a brilliant solution to a difficult problem. As form, I find it splendid in its relationship to the other buildings and the site — particularly the mountains and trees. In structure I find it ingenious and valid. As a whole concept, it seems to have a special appropriateness for the Air Force.

— **Eliot Noyes, Architect**

The latest design, if imagined to be free of its surroundings, should be effective, possibly handsome, both in silhouette and in the alternation of light and shade on the angular faces. The height will be impressive probably from the exterior and certainly on the interior.

Taken in context with the other units of the Academy as they are now proposed, one may wonder at the effectiveness of the change from the grand sweep of rectangular planes — in glass and concrete — to small, sharply triangular divisions.

Do the two architectures come about in order to emphasize the difference between the religious use and military-academic use, or is the difference compelled by the difference in framing? Perhaps this is not important.

At any rate, none of it appears to have been the concern of those who debated the design in Congress. I gather that the worry there was that the chapel just didn't look the way the Congressmen thought a chapel should look. Time can be the only remedy for this, unless

(Continued on page 278)

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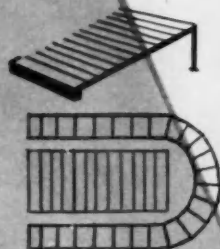
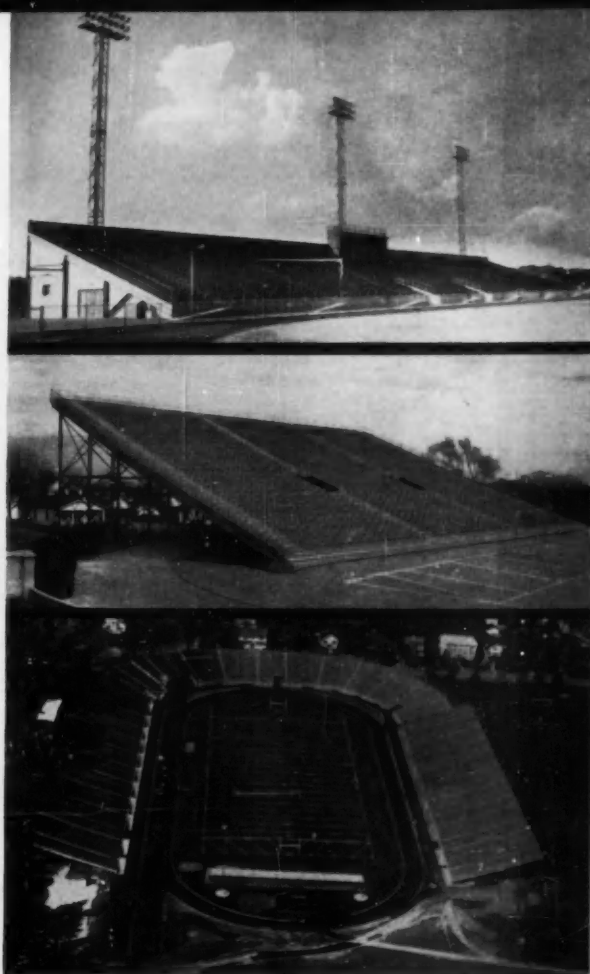
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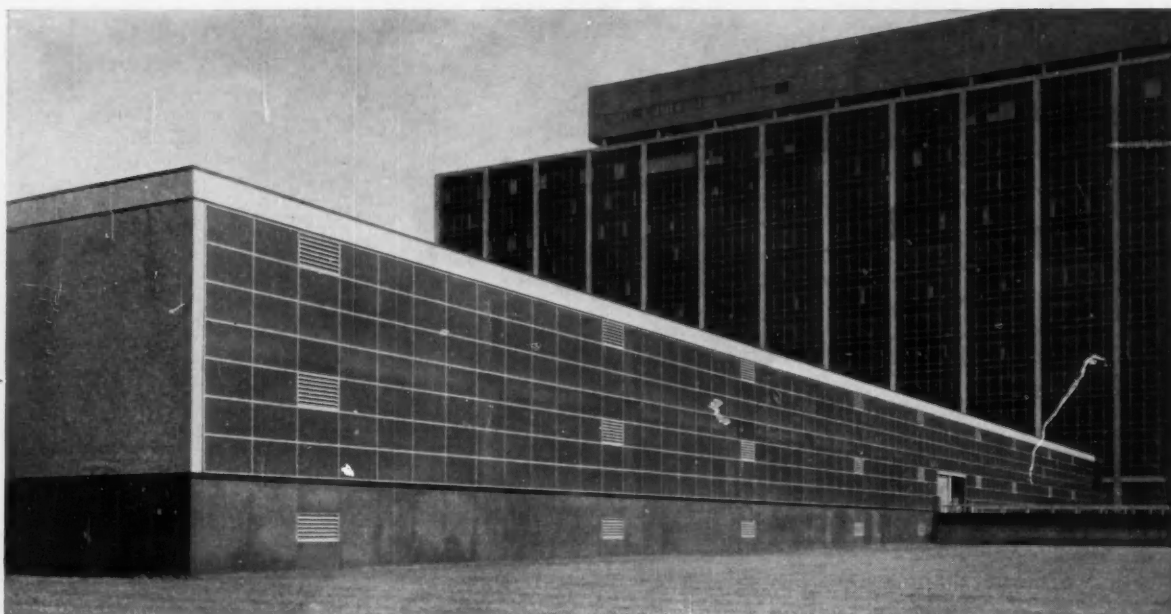
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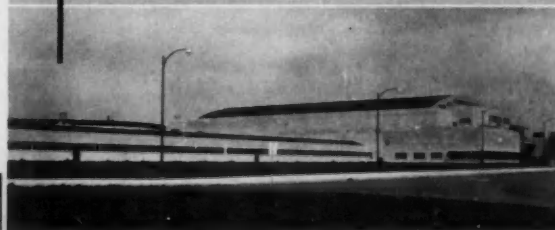
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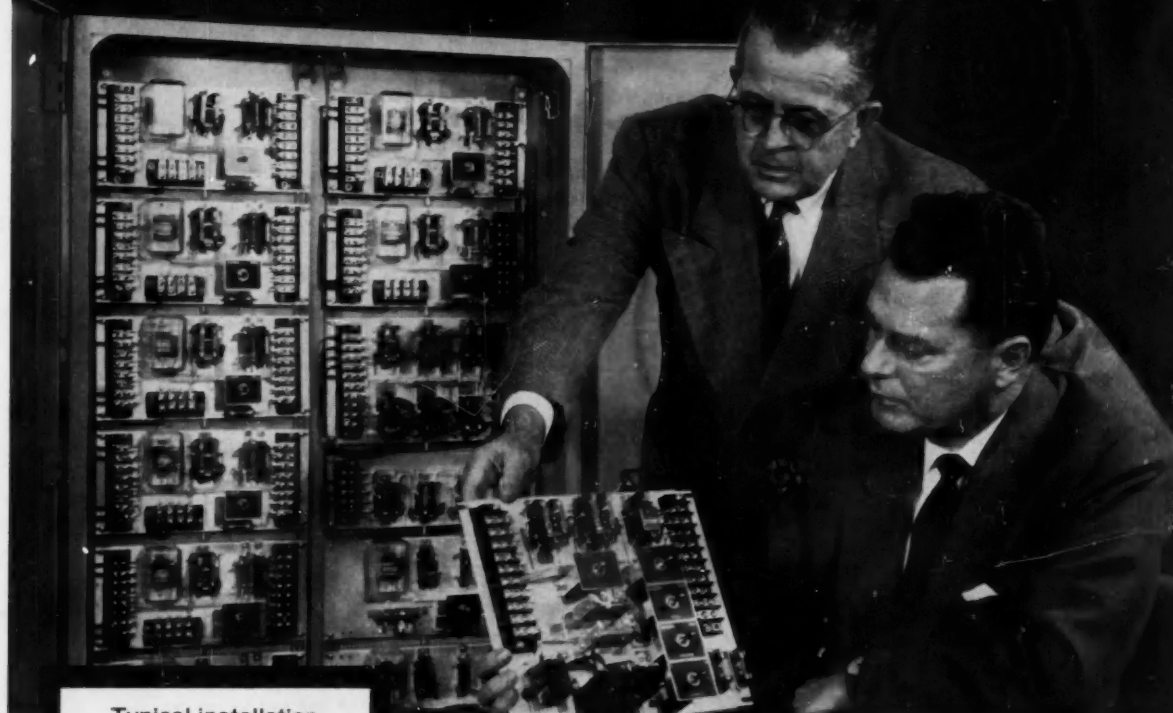


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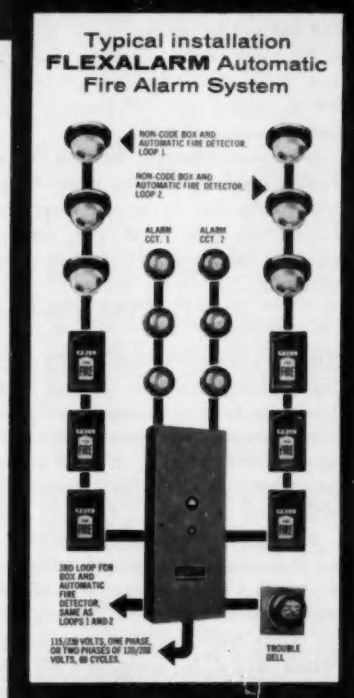
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## PERSPECTIVES

(Continued from page 272)

there is to be a finishing school in fine arts for confused Congressmen.

— Paul Schweikher, Head, Department of Architecture, Carnegie Institute of Technology

The employment of the distinguished architects for the above project was de-

cided only after considerable deliberation.

Responsible clients accept the advice of responsible counsel. It is regrettable that such practice has not prevailed.

— Glenn Stanton, Architect, former president, American Institute of Architects

In rationalizing the Air Academy problem, I would hesitate to start out by denying a member of Congress his right to a personal opinion. He is answerable to his constituents and that means you,

and me, too. However, in this case, I believe we are in safe hands and undue anxiety is being expressed.

To go beyond this point, however, and satisfied to leave the design of the Chapel strictly to S.O.M., I believe there is an error in philosophical perspective in the programming for the building.

The thought of a Protestant church atop a Catholic church and a synagogue in the round would have made a Pilgrim Father or a rugged Calvinist or Huguenot turn pale. How these divergent religious viewpoints can be reconciled, hand-in-hand, is hard to explain. Protestantism, by its very nature, is in contradiction to Catholicism, and Judaism is in contradiction to both.

It is the style nowadays to stress the common meeting ground. But the common meeting ground too often deprives people of their intrinsic right to be different. The amalgamation of religions under one roof sponsored by a free and democratic government, in a government institution, if you will, does not bode well for individual liberties and freedom from intrusion, which have been sacrosanct in our country since the dawn of its history.

We must protect freedom of religion but just as surely we must protect ourselves against the new freedom which seems to be to intrude.

When everybody's freedom is nobody's freedom we have cause for real worry, and this, to my mind, surpasses by far any opinion we may have on separate entrances, or the appearance of a building.

— Paul Thiry, Architect

The Air Academy Chapel is an arresting piece of architectural design. It has been conceived with singular unity and carried to the paper stage illustrated in the September issue of ARCHITECTURAL RECORD with great professional skill.

But it leaves me spiritually cold. As an expression of peace and humility it is wanting. As an expression of stern righteousness and might, it fails. How to infuse these qualities in a building which would be architecturally compatible with the mathematical precision of the rest of the brilliant design may be possible but has not been achieved.

Perhaps there should not be a chapel building or buildings but just a hill with a wooden cross and other symbols of eternal unchanging faith and trees and earth and the sky.

— Edgar I. Williams, Architect

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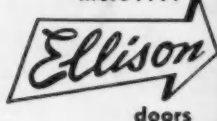
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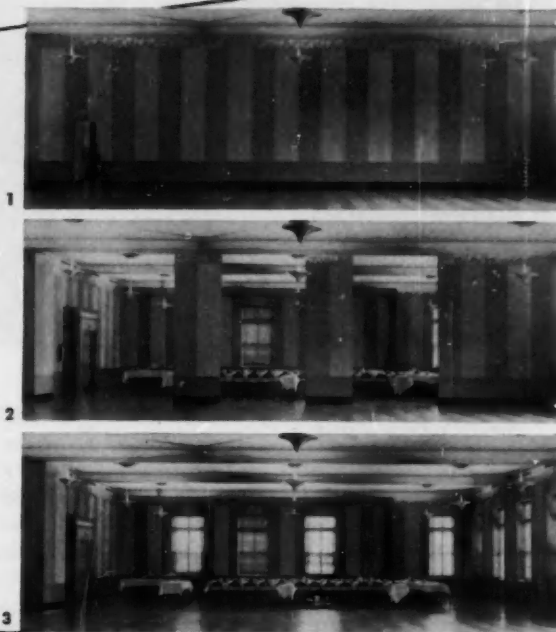
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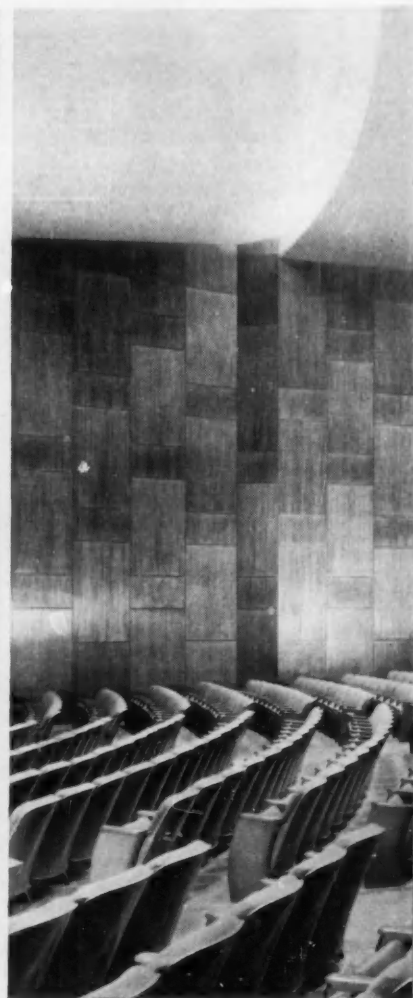
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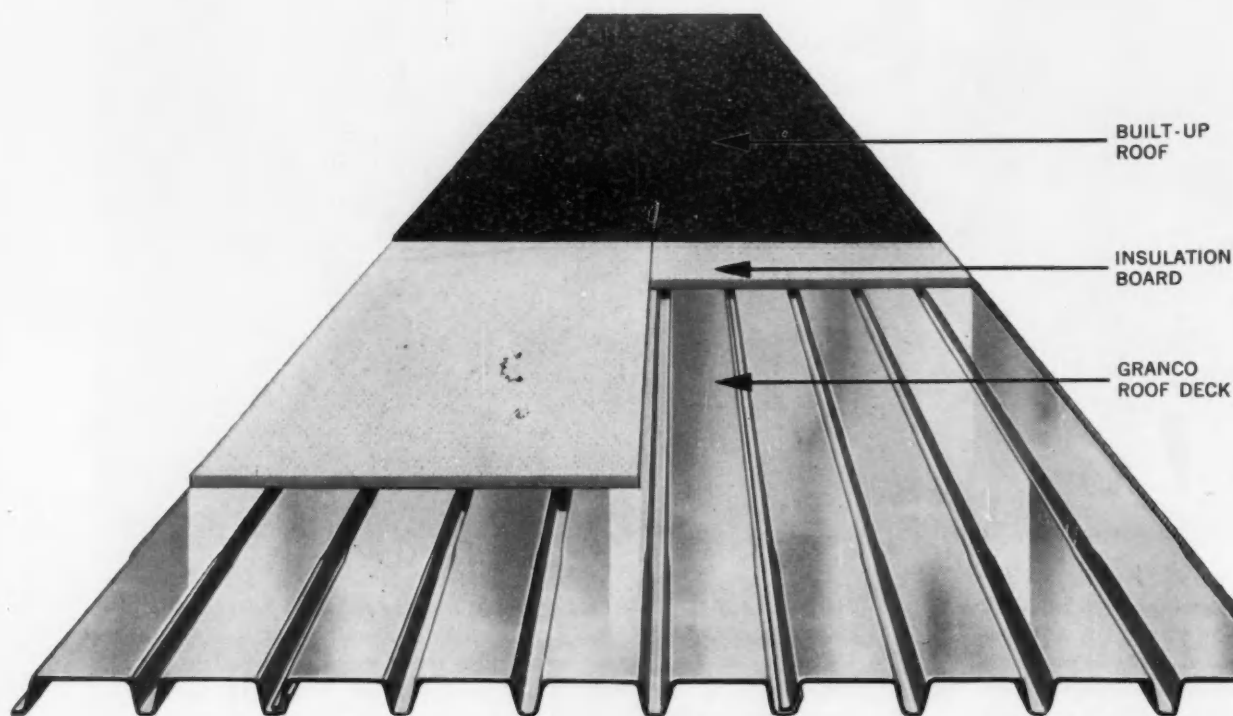
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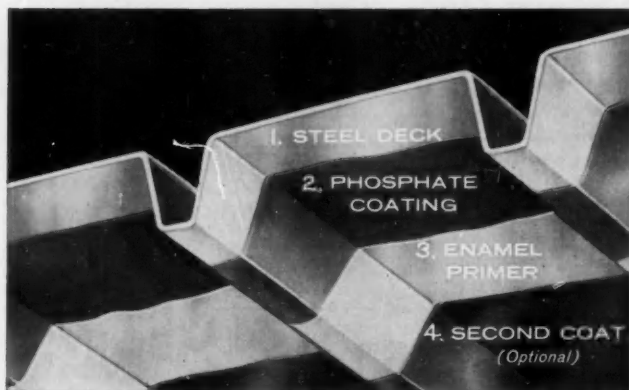
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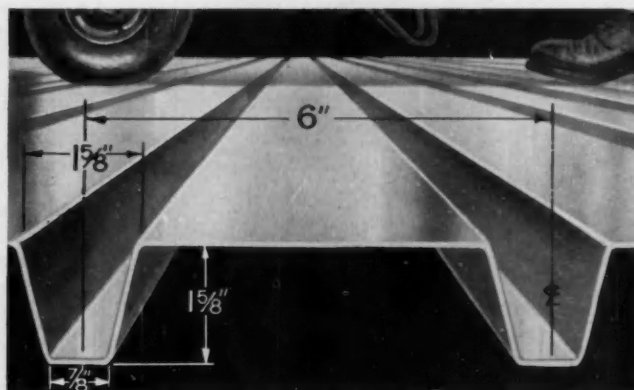


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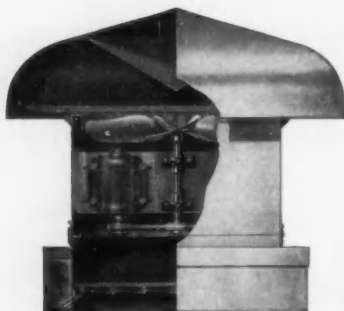
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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 48)

ecutive director of the Building Research Institute.

Speaking recently at the Navy's Port Hueneme, Cal., symposium on "cost reduction through creative design and engineering," Mr. Scheick reiterated his long-held view that the cost of construction cannot be appreciably lowered through research until there is integrated building research. We must have the concept of the completed building as the end-product of an industry, he said.

Pointedly, the BRI director noted that presently there is "literally no research dealing with the building as a complete product. Until we have such integrated building research we should not have high hopes for cost reduction through research," he observed. "We are presently in the stage of improving the building's parts and pieces — a stage which precedes cost reduction through mass production."

Recognizing, however, the strides made in building research during the past decade, Mr. Scheick presented an encouraging picture of the potential in the field for the next 20 years, outlining the major areas of integrated research as: (1) basic requirements and data; (2) design and engineering; (3) materials, products and service systems; (4) construction methods; (5) maintenance and operation; and (6) economics, codes and labor.

### Architects Share Reproof

Architects and builders came in for some criticism for their lack of activity in this vital field. Mr. Scheick said the American Institute of Architects, with a tremendous potential for research in building design, had hardly "wet its feet" in research. He described a tendency on the part of the non-manufacturing segments of the industry to turn to the manufacturers in seeking financial support for their own programs as "one very weak link in the research chain." The design professions and the builders could be in a unique position in building research, he believes. For they are the ones who need to be concerned only with the excellence of the building itself as an end-product, regardless of the materials used.

"But they seem unwilling to assess themselves for funds to carry on the

(Continued on page 290)

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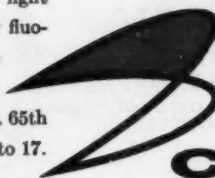
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Editor-in-Chief, Architectural Record

Presents 35 new religious buildings, each of which is the work of a gifted architect collaborating with a clergyman and building committee who were not afraid to break with the architectural past. The 35 buildings represent all denominations, and are from many areas of the world, although the majority are in the United States. Each building is shown in several brilliant interior and exterior photographs, as well as plans and drawings.

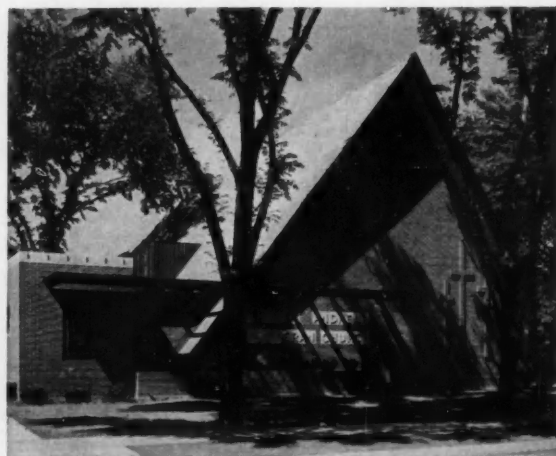
In addition, there are several other valuable sections in this comprehensive book. One is called "Worship and the Arts." The opening essay of this section thoughtfully and meaningfully explores the relationship between eternity and the moment — as it pertains to the design of churches. There follow six articles by leading clergymen on worship and the arts in their particular tradition — Jewish, Catholic, Orthodox, Episcopal, Reformed, and Lutheran. Each is illustrated with an outstanding new building of that faith.

There is also a series of cogent studies by leading architects, clergymen, and secular authorities. One is by a noted economist, who predicts that 70,000 churches will be built or substantially rebuilt in the U.S.A. in the next ten years. Another, titled "A Religious Architecture for Today," attempts to define the religious architectural requirements of the atomic age, so that our churches may represent us just as the Gothic, Byzantine, and Baroque churches and cathedrals did in their time and civilization. There are four more studies of equal interest.

With over 300 excellent illustrations, a complete bibliography, and a comprehensive index, RELIGIOUS BUILDINGS FOR TODAY will be a source of delight for everyone interested in religious art and architecture, and an inspiration for everyone concerned with planning and building the new church.



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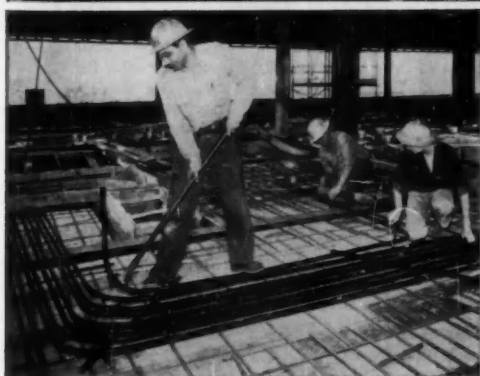
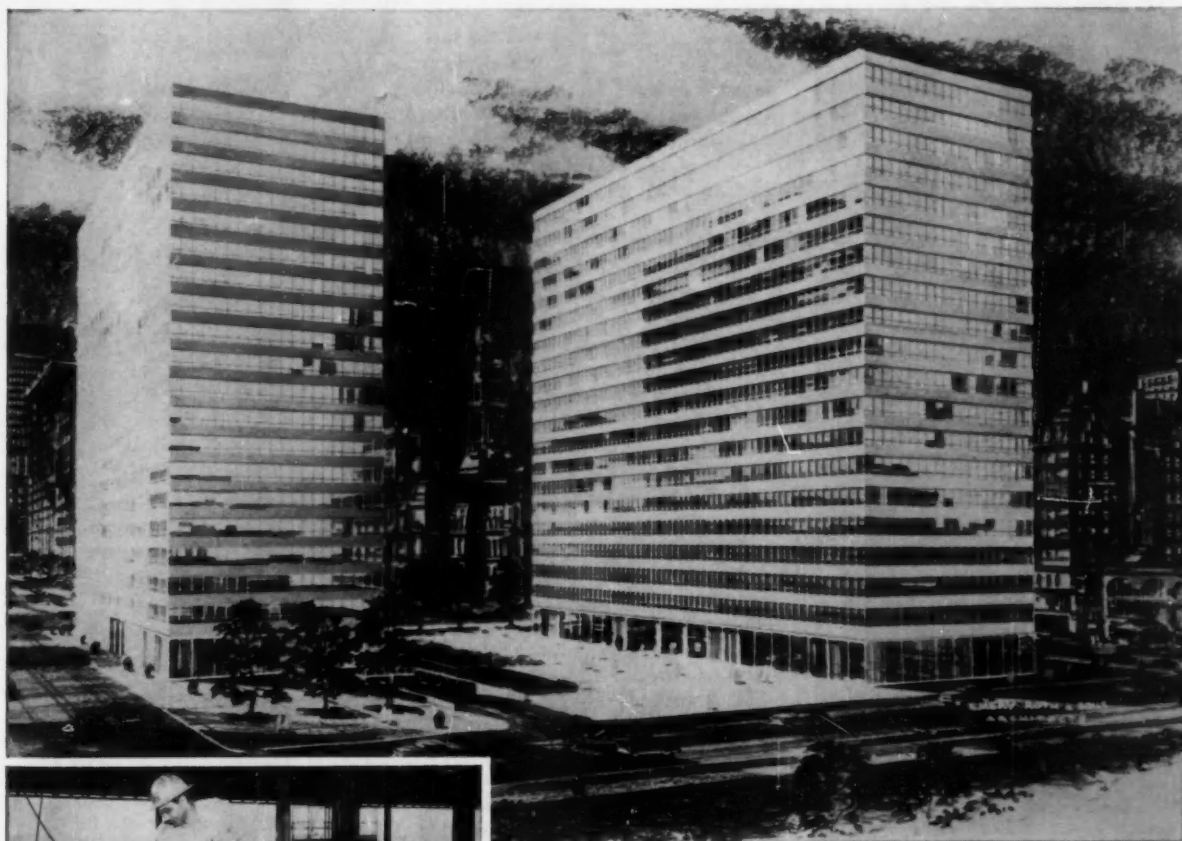
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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 284)

objective and independent research of which they are capable," Mr. Scheick continued. "Instead, they seek the support of the makers of parts and pieces of the building who quite naturally must be interested in the perpetuation of the use of their own products and are willing to support only research programs which promise to do so."

### The Coming Revolution

Looking ahead, Mr. Scheick said there would certainly be rapid and revolutionary changes in building research and so in buildings themselves in the next few years. A few examples of the forces he noted are now at work:

—The metal curtain wall—a new industry—made up of many existing parts of the building industry with a direct interest and financial stake in the success of curtain walls. For the first time we have in curtain walls a building product which will bring together a good many parts of the industry to work together in building research.

—Another giant industry—chemicals—has decided to compete for the building materials market. This is an integrated industry with keen appreciation for the value of research and how to create new markets through research. Its "blue sky" teams are approaching the science of building with a fresh viewpoint, seeking the advice of designers and builders on every side.

—The older, established parts of the building industry are countering with "think sessions" and new research programs of their own.

—The entire building industry is embracing the "component" concept of design and construction. This is the first big step toward fewer pieces and fewer assembly operations which will mean reduced costs in construction.

### What's Needed?

Several areas of need were outlined by Mr. Scheick:

1. We need very much more in basic design data.
2. Principles of space usage and planning-for-function are researched in only a handful of top-flight architectural offices. Each major building type suggests the need for many studies of its various functions in order to plan its space for utmost efficiency, economy and flexibility.

(Continued on page 296)

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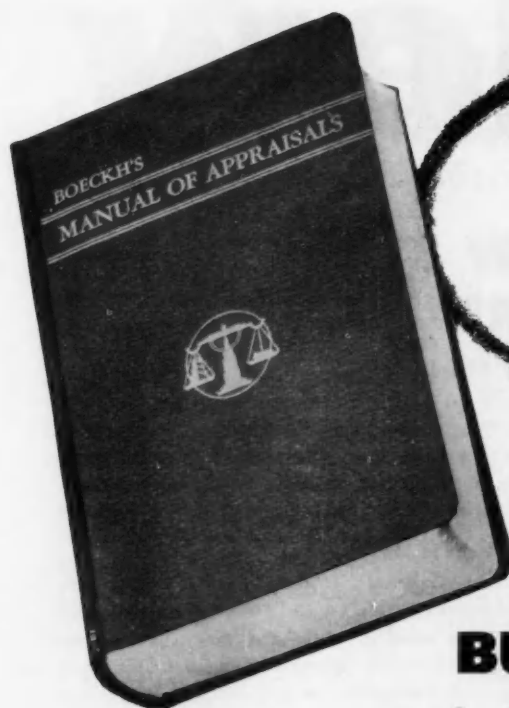
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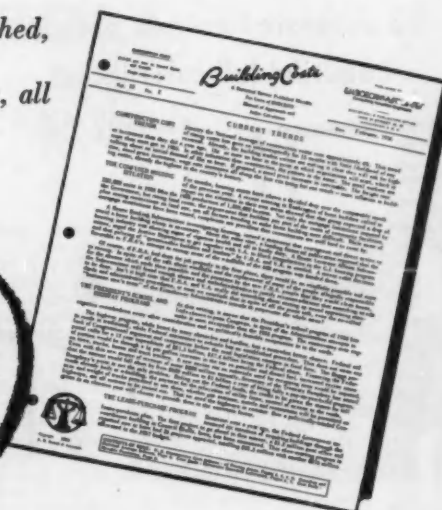
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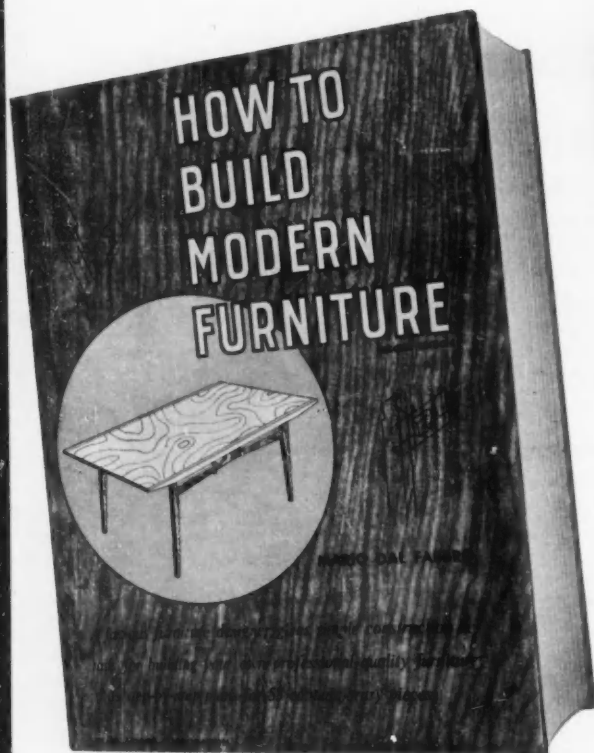


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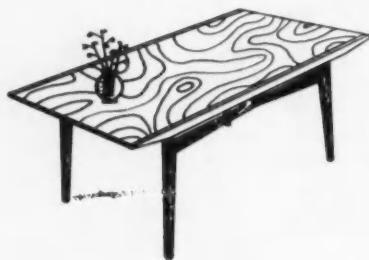
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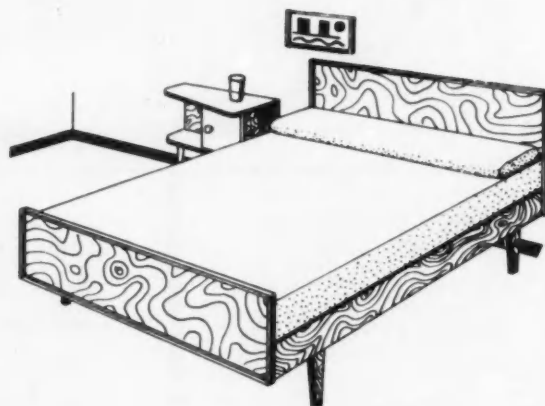
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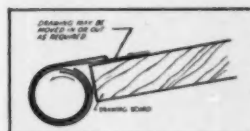


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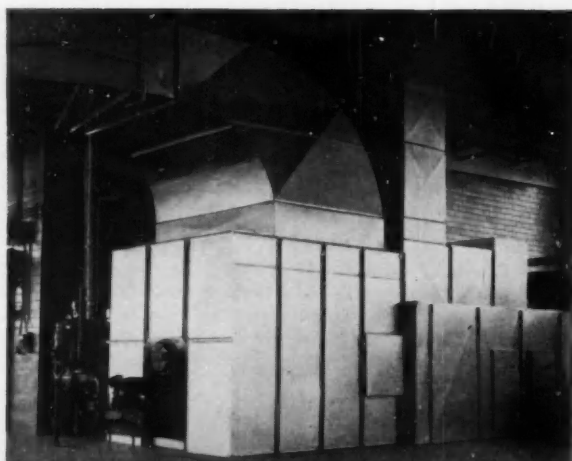


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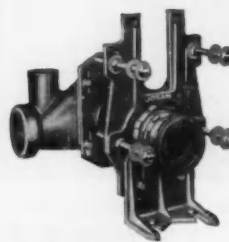
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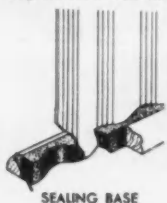
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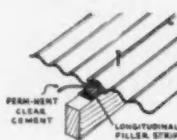


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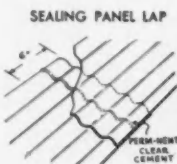
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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 290)

3. Construction methods and on-site operations are nearly untouched by the kind of research that has done so much to increase productivity in other industries. When we "manufacture" a \$10 million building dozens of times, doesn't the operation deserve enough study to lick something like the problem of working in mud?

4. Our most shocking shortcoming in building research is the absence of data on the performance-in-service of the end-product. With billions of dollars worth of buildings in use, we can find almost no quantitative data on failures or successes of the buildings and their parts. Too often too many parties are interested in hushing the reports of failures rather than contributing them to an organized storehouse of such data (if one existed). The link between the owners and operators of existing facilities and the designers of new ones is tenuous indeed except in a few of our big industrial companies that are taking this opportunity seriously. The government construction agencies could make great contributions in this area with close liaison between their design and maintenance departments.

5. The subject of building cost itself is an area of research apparently needing the broadest collaborative study. Is lowest annual cost for the "life" of the building the proper yardstick? What is a building's life? When is it obsolete? What yardsticks of cost should apply to "temporary" buildings, and when, indeed, is a building temporary and how do you design it to be so? Design, technology, and economics are intertwined in these perplexing questions which the Building Research Advisory Board ran into in its studies for the Defense Production Administration and the Bureau of Yards and Docks.

### Code and Labor Obstacles

Beyond this, Mr. Scheick outlined two conditions he said were seriously retarding the use of new products and methods and adding to costs: (1) non-uniform and antiquated local building codes and (2) jurisdictional disputes by labor over the installation of new products. He asked: Can you think of any other modern industry where such obstacles to progress are allowed to exist?

A great need, he said, is for collabora-

(Continued on page 302)

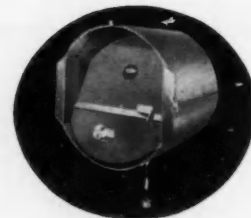
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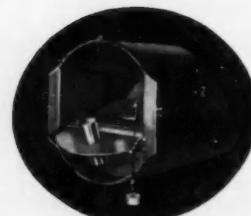
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left: Tile Mosaic — The Whiting Lane School, West Hartford, Conn., Moore & Salsbury, Architects, Henryk Mayer, Mosaic Designer, Central Marble & Tile Co., Tile Contractor.

below: Danwood School, Park Forest, Ill., Loebel, Schlossman & Bennett, Architects, McWayne Co., Tile Contractor.

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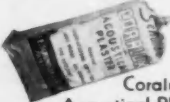


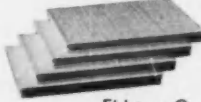
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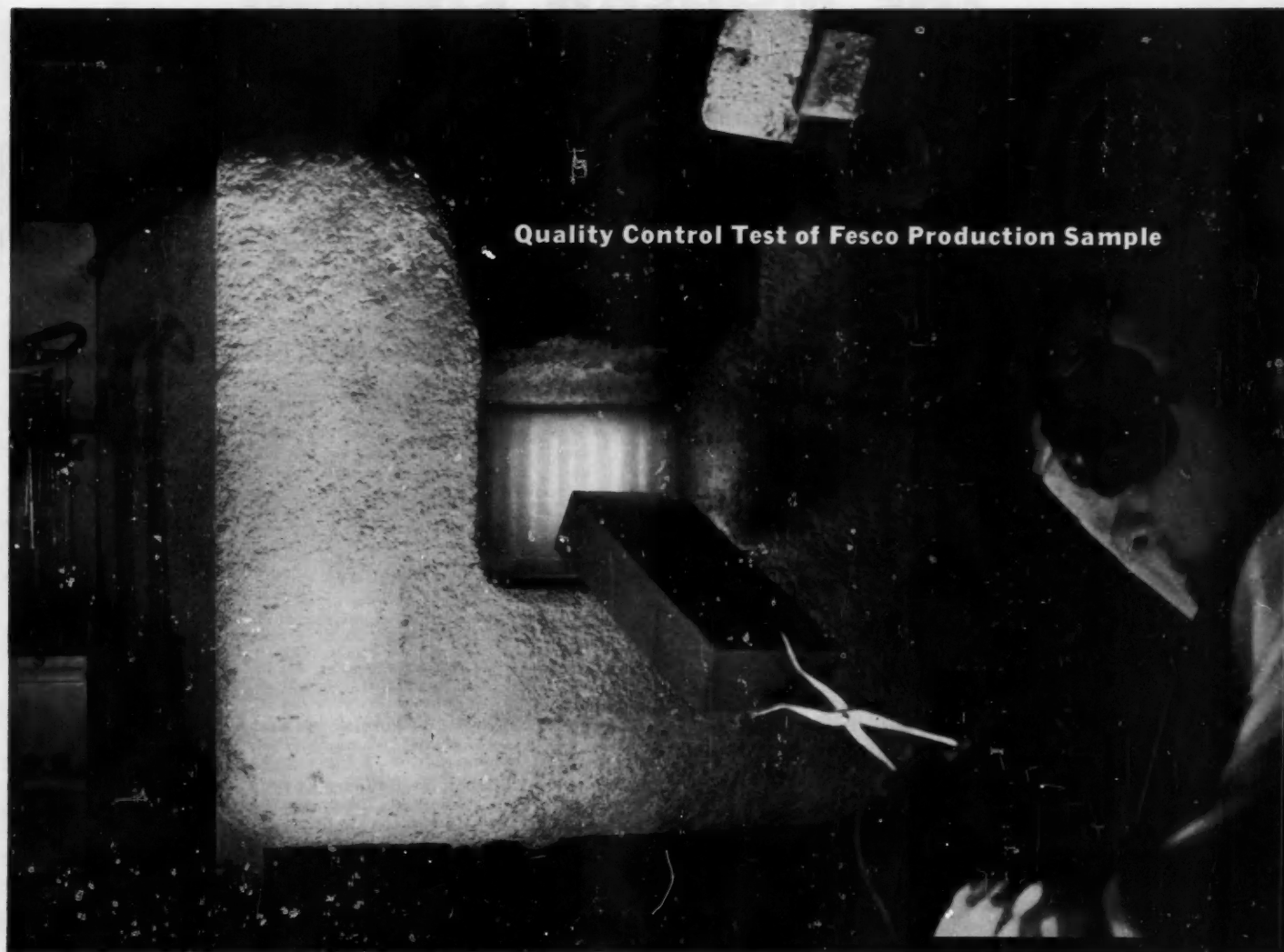
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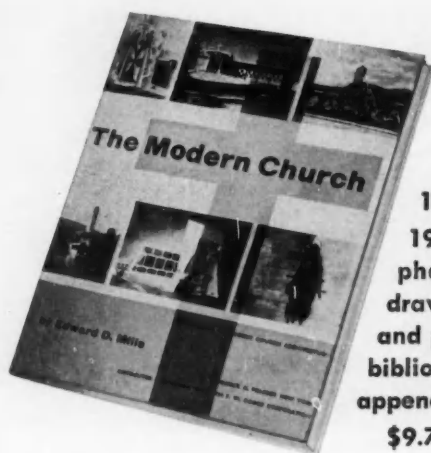
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## COMPLETE OUTLINE OF CONTENTS

### Chapter 1—Historical Introduction

First centuries of the Christian church, Cult of the saints, The altar, Orientation, Baptism, Bishop's throne; pulpit, Position of the congregation, Development of the church in England: Roman, Gothic, Nonconformist

### Chapter 2—The Church and the Community

Suburban expansion, Relationship between church and community, Churches for new communities

### Chapter 3—Planning Considerations

Site selection, Entrance, The nave, Sanctuary, Chapel, Choir, Baptistry, Vestries, Lavatory accommodations, Ancillary accommodation, Parking areas

### Chapter 4—Acoustics

Reverberation, Echo, Problems of partial and full congregations, Sound absorption coefficients of various materials, Conditions for preaching and music, Position of choir, Special requirements

### Chapter 5—Practical Considerations

Heating: basic requirements, low-pressure hot water, hot-air, individual heaters, comparative heating estimates; Ventilation, Natural lighting, Artificial lighting: requirements of various interior areas, tables of recommended illumination values, selection of fixtures, Insulation: heat insulation, sound insulation

### Chapter 6—Materials

General considerations, Stone, Brick, Concrete, Plaster, Timber, Roofing materials: lead, copper, aluminum, built-up felt, asphalt, tile, slate, shingles, Floorings: wood, stone, terrazo, plastic tile, other materials, table of recommended flooring materials for various areas, maintenance

### Chapter 7—Furnishings and Religious Art

Seating: fixed and movable, Stained glass, Paintings, Sculpture

### Chapter 8—Building Costs

Cost estimating, Percentage costs

### Appendix 1—Church Planning Data

Approval of authorities for all Christian churches, Altars: specifications for all Christian churches, Baptistry and Baptismal tank, Bells, Bishop's throne, Candlesticks, Altar canopy, Chancel, Chapels, Choir, Caretaker's storage, Color, Canopeum, Communion rail, Confessional boxes, Credence table, Cross, Crucifix, Dossal, Dressing cubicles, Entrances, Floor area, Floor gradient, Flower vases, Font, Footpace, Frontal, Galleries, Gradine, Holy Wa.er stoup, Hymn-boards, Images, Lectern, Missal stand, Mortuary chapel, Narthex, Organ, Orientation, Monstrance, Notice boards, Passage-ways, Pews, Piscina, Pulpit, Reliquaries, Reredos, Riddels, Rood screens, Sacristy, Sanctuary, Sanitary accommodations, Seating, Sedilia, Signals, Standards, Stations of the cross, Storage, Tabernacle, Throne for exposition, Vestries, Vigil lights

### Appendix 2—Ancillary Accommodation

Assembly hall, Caretaker's quarters, Corridors, Dressing rooms, Games, Handicrafts, Kitchen, Library, Parking, Projection room, Sanitary accommodation, Stairs, Sunday schools, Vicarage

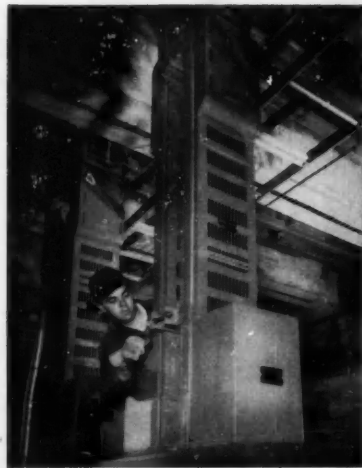
### In the words of the author:

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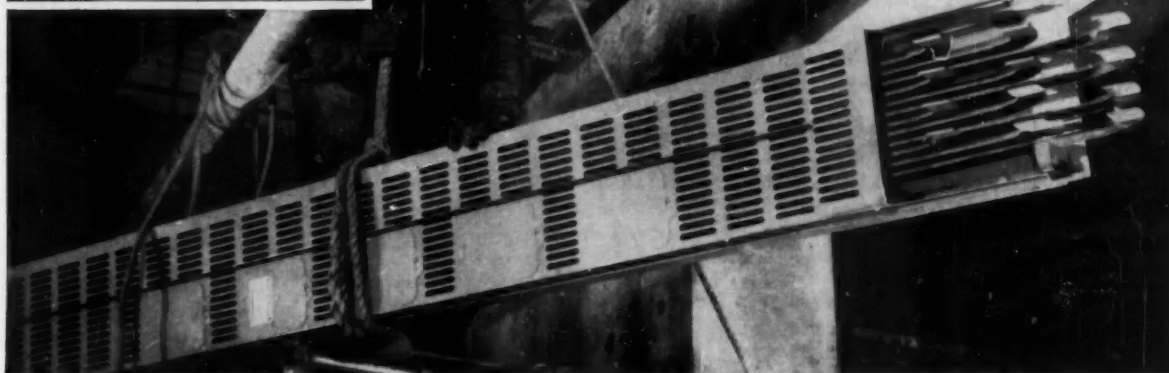


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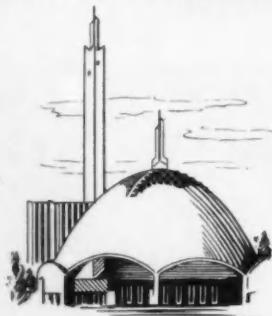


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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 296)

tion of enlightened leaders in industry and labor to remove all road blocks to progress on the premise that the end result inevitably will be more buildings and more work for all. Research exists as a challenger and tool for progress for those who will pay for it and use it.

### U. S. ISSUES NEW MANUAL ON SCHOOL BUILDING PROGRAMS

For 55 cents, architects, engineers, school officials and others interested in school planning and construction now can obtain from the U. S. Government Printing Office at Washington, D. C., a copy of a new manual published by the U. S. Office of Education—"Local School Construction Programs."

This booklet was authored by Dr. N. E. Viles, associate chief of the school housing section of the Offices of Education and presents in its 80 pages general guide lines for planning the various steps in school construction. A foreword notes that school plant programs today are costly and that school officials seldom feel free to do much experimenting in school plant construction at district expense. It is felt the new publication may serve to help them avoid repeating the mistakes that might affect the building efficiency or durability.

#### *The Architect's Part*

The booklet gets into fine points of architect responsibility in its introduction:

"Many school boards have had limited experience in planning school plant programs and in constructing school buildings. Many of these school boards have not found it possible or convenient to employ planning and building directors who have had extensive experience and training. It is true that most school boards employ an architect who accepts certain designing, planning, and other construction obligations. However, he does not normally (and probably should not) accept responsibility for educational planning, site selection, financing programs, and many other problems that are a part of the obligations of the local officials. These local officials often wonder whether they have covered all of the essential points in planning and carrying out a school construction program."

(Continued on page 308)



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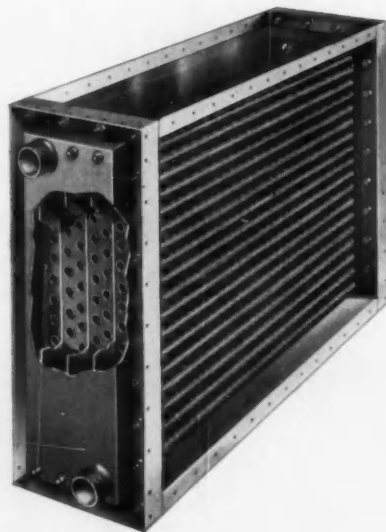
Architects: Perry, Shaw, Hepburn & Dean, Boston, Mass. Consulting Engineer: Slocum & Fuller, New York City. Heating Contractor: Ambrose Augusterfer Corp., Philadelphia, Pa. Builders: McCloskey & Co., Philadelphia, Pa.

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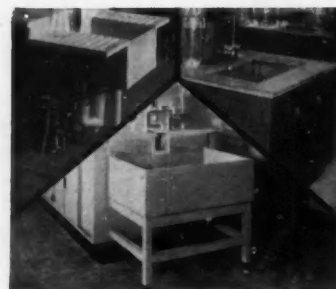
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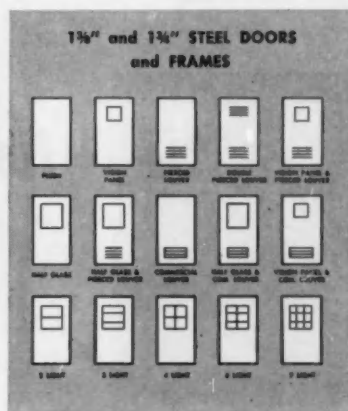
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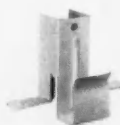
Suburban Community Hospital, Cleveland, Ohio.

Architect: Dalton-Dalton Associates; General Contractor: The H. L. Vokes Co.;  
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Holostud's *fast clip* holds the stud and starts the gypsum lath—in one operation.

## Holostud with Gypsum Lath



Construction savings count — and the money saved by Holostud in Cleveland's new \$2,000,000 Suburban Community Hospital was then available for other vital hospital facilities.

Gold Bond's Holostud Wall System for non-load-bearing partitions makes installation faster — the new combination stud shoe and starter clip shown here, for example, saves up to 2½ minutes on every stud. Holostud's open-strut-type construction speeds and simplifies routing of utilities horizontally as well as vertically.

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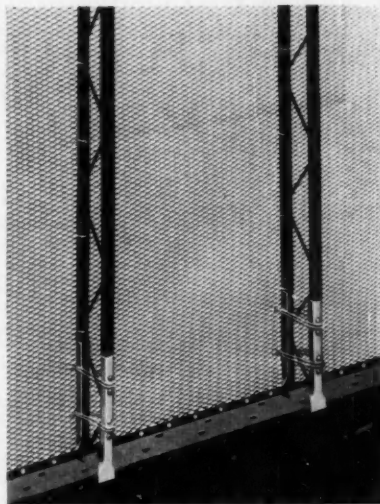
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## strength and versatility



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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 302)

The intention of the publication, it pointed out, is to provide a general list or outline of procedures without attempting to advise on each procedure involved or to provide specific solutions or answers to the many problems and questions that may arise in a particular program.

### What the Manual Covers

Sections of the manual after the introduction are divided as follows:

**Study and Planning Phase.** This goes into school plant surveys, board actions, informing the public, planning, site selection, layout, landscaping, architectural services, drawings and specifications.

**Building Construction and Equipment.** This covers construction contractual services, supervision, equipment, inspection and approval of the completed building.

**The Financing Phase.** Two subjects here, financing school plant programs and bond payment amortization schedules.

**Summary.** Procedure steps.

### About Architectural Service

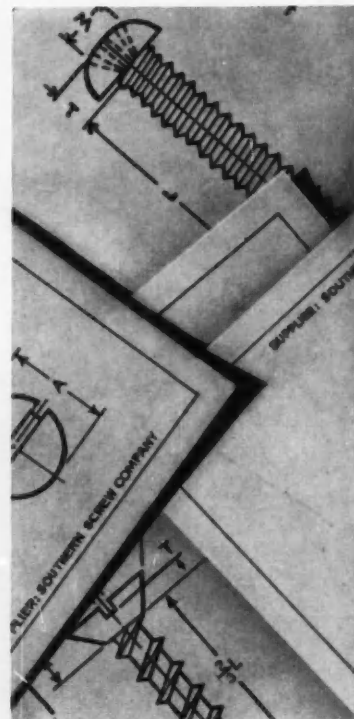
The "architectural services" unit of the publication states in part:

"The school officials establish the general type, scope, and location of the proposed project. Within the scope and type limitations established, the designers translate these needs and desires into building design or drawings and specifications. The local board of education should select with care the architects who will be responsible for planning a building to serve the community for the next 50 to 75 years. The architect and the designing staff play an important part in school plant construction programs.

"The architect may be employed on a fee basis for this one job; he may be a salaried employee responsible to the system; or he may be regularly retained by the board to do any desired construction planning on a fee basis. In each case the manner of selection may be different. Some of the design duties and obligations will be similar in each case, but some obligations and relationships may vary with the nature of the employment.

"The experienced school board may

(Continued on page 314)



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Presents an index set of unit costs for typical shift crews, against which you compare local crews, arriving at a productivity percentage. By checking that figure against only three tables, you arrive at shift cost, output range, and unit cost for the operation.

Checklists are included to ensure that no cost item is overlooked. A total of 160 tables are in the book.

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### RELIGIOUS BUILDINGS FOR TODAY

edited by John Knox Shear, A.I.A.

Editor-in-Chief, Architectural Record

Presents 35 new religious buildings, each of which is the work of a gifted architect collaborating with a clergyman and building committee who were not afraid to break with the architectural past. Protestant, Catholic, and Jewish buildings are shown, from all parts of the United States as well as Europe and Asia. Each building is shown in brilliant photographs, and plans and drawings.

There are several other sections. One is called "Worship and the Arts". It explores the relationship between eternity and the present, as it pertains to the design of churches. There follow six articles on worship and the arts in different traditions — Jewish, Catholic, Orthodox, Episcopal, Reformed, and Lutheran. Also contains cogent studies by leading architects, clergymen, and secular authorities. Over 300 excellent illustrations.

184 pages. 8 1/4 x 11 1/4. Illustrated. \$7.50

### THE MODERN CHURCH

by Edward D. Mills

A comprehensive study of the requirements and design standards of Christian churches. Covers new church construction step by step, from site selection and approval by church authorities through acoustics, materials, furnishings and religious art, and building costs. Some 200 illustrations of the best in contemporary church architecture in America and Europe.

189 pages. 9 x 9 1/2. Illustrated. \$9.75

### BUILDINGS FOR INDUSTRY

by the Editors of Architectural Record

An outstanding selection of new industrial buildings constructed in the past 7 years, together with a series of informative studies on trends and factors in present-day industrial building design. Approximately 70 projects are shown from all areas of the United States, as well as a few from overseas. The buildings are divided into the following categories: Warehouses, Light Industry, Con-

sumer Goods, Manufacturing Laboratories, Utilities and Service Industries, and Heavy Industry.

But the book does not just show you a few well-chosen photographs of industrial showplaces. It analyzes each building — shows how it meets the needs and policies of the company, explains choice of site, plan, lighting, colors, location of loading docks, rail spurs, employee cafeterias, washrooms, parking lots, and dozens of other features.

There are a total of 12 studies in the first section, *Design Principles*, on such topics as: Materials Handling and Industrial Architecture, Functional Color in Industrial Buildings, Planning Electrical Systems, and nine others. Over 700 illustrations.

315 pages. 8 1/4 x 11 1/4. Illustrated. \$9.75

### HOW TO BUILD MODERN FURNITURE

(Second Edition)

by Mario Dal Fabbro

Clear, easy-to-follow instructions for building your own professional quality furniture, plus step-by-step plans for 53 contemporary pieces by a famous furniture designer. A complete revision of the old two-volume set, improved in every way — new projects, new type and format, new low price.

The first section gives instruction in basic woodworking operations, selection of materials, joints, assembly, wood finishing, and upholstery. Standard measurements of all furniture pieces are listed.

The second section presents 53 separate furniture pieces: Hi-fi cabinets, chests, tables, chairs, beds, and many others. Text is brief and clear — unique exploded diagrams do most of the teaching. Each project contains a list of materials, directions for assembly, and several plans and diagrams. There are over 1200 diagrams and drawings in all.

224 pages. 7 1/4 x 9 3/4. Illustrated. \$4.95

### HOW TO MAKE BUILT-IN FURNITURE

by Mario Dal Fabbro

Step-by-step instructions for constructing 102 contemporary built-ins by a famous furniture designer. Indispensable for making any home more livable, beautiful, and spacious with expertly-designed, easily-made built-ins. This practical book presents unique sequence plans and illustrations which virtually eliminate the errors and miscalculations which arise in these projects. Projects can all be built from standard grades of wood using common woodworking tools.

Included are pieces for living rooms, kitchens, bedrooms, playrooms, attics and cellars. Hundreds of variations and adaptations can be made from these unusual plans, and the book is also an excellent source of data for designing your own built-in projects.

259 pages. 7 1/4 x 9 3/4. Illustrated. \$6.95

### THE ART OF HOME LANDSCAPING

by Garrett Eckbo

Here is the book to prevent wasting and spoiling outdoor space by haphazard, unplanned landscaping. Tells how to plan, build, and plant to achieve useful and beautiful outdoor space for living.

With this one book anyone can recognize his landscaping needs, plan them on paper, substitute pencil work for back-breaking trial and error, do his work in easy stages, and eventually provide useful space to the limits of his lot. The book is especially valuable to the new home buyer or builder, often faced with a barren mud flat, who cannot afford to make costly mistakes in his basic planning.

Eckbo, one of America's leading landscape architects, covers in illuminating detail such vital topics as: Recognizing your needs, Drawing plans, Scheduling work and money, Foundations, Walls, Enclosures, Screenings, Drainage, Soil conditions, Solar orientation, Weather considerations.

256 pages. 6 1/2 x 9 3/4. Illustrated. \$5.95

## LANDSCAPE FOR LIVING

by Garrett Eckbo

Planned with insight and written with craftsmanship, this professional-level volume examines the purposes, problems, and practices of landscape design.

Entire sections are devoted to materials, plants and planting, site conditions, structural factors, gardens, public buildings, group housing. Included are many photographs, renderings, and diagrams of fine landscaping.

288 pages. 8 x 10 1/2. Illustrated. \$10.00

## TIMBER DESIGN AND CONSTRUCTION HANDBOOK

prepared by Timber Engineering Company

The complete master handbook of timber design and construction, written and edited by 34 engineers and timber specialists. Serves two purposes: It is a comprehensive timber design reference, and it is also a practical field handbook. Offers every bit of essential information needed to develop and construct the best wood structures. Years in preparation, it includes the results of the latest research by timber scientists.

The first portion covers the fundamental structural characteristics of wood. Lists types, grades, and ways of preservation. The next ten chapters explore and analyze preliminary design considerations, general design procedure, design details, fabrication and erection. The final chapter presents 129 pages of design and engineering specifications and precise tabular data allowing easy conversion for particular grades and species. These tables give the user a concise reference to fit the many combinations of grade, span, and loading. Of immense value to everyone concerned with wood design and construction.

622 pages. 6 x 9. Illustrated. \$12.75

## ARCHITECTURAL ENGINEERING:

New Concepts • New Methods •  
New Materials • New Applications

by the Editors of Architectural Record

Nine years of new findings and developments have been examined in selecting the technical studies that this new book contains. Each study is a detailed, up-to-date source of specific information for which there is great current professional demand. Each study is graphically complete with plans, diagrams, illustrations and photographs — over 1,500 in all.

The book is composed of six extensive sections: The Building Shell, Environmental Control, Utilities, Site Planning, Materials, Special Problems. Here are simplified cost-cutting methods, new uses for old and new materials, new structural systems and new mechanical and electrical equipment. Includes explorations into many newly developed areas such as residential heat pumps, concrete prefabrication, residential solar heating, lightweight aggregates, structural plywood, plastics for buildings and atomic blast-resistant buildings.

494 pages. 8 3/4 x 11 1/2. Illustrated. \$11.50

## APPLIED STRUCTURAL DESIGN OF BUILDINGS

by Thomas H. McKaig, Consulting Engineer

A practical office manual containing simple, standardized procedures for solving structural design problems. This unique handbook had its inception as a series of notes used by the author in his instruction of a group of architects and engineers who were preparing for state licensing examinations. Strictly a practical work with no attempt made to develop theory, which is obtainable in any textbook.

The structural designer will find in simple, convenient form the processes which will serve him best as working tools. Here are short cuts, tables, formulae, sketches — a wealth of practical information — all designed to save countless hours of detail, help standardize office practice and simplify the designer's work. Every piece of information in this new book has been tested by actual experience and proven to be reliable and useful. Invaluable for those preparing for their licensing examinations.

442 pages. 7 1/4 x 10. Illustrated. \$12.50

## TIME-SAVER STANDARDS

(3rd Edition)

by the Editors of Architectural Record

Since 1946 *Time-Saver Standards* has served as a working partner to thousands of architects, engineers, designers, builders, and other specialists in the construction field. Users consider this book the one indispensable reference to any and every question of building principle, practice, and procedure. As a daily working tool on construction projects of every size, description, and dollar value, *Time-Saver Standards* has saved endless hours of research time, immeasurable extra work, and many costly mistakes, as well as millions of dollars on construction costs.

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## DESIGN FOR MODERN MERCHANDISING

by the Editors of Architectural Record

Here is a detailed study of the physical design of selling establishments of all types: stores for soft goods and hard goods, food stores, department stores, wholesale showrooms, and that off-spring of a booming suburban market, the shopping center.

Over 600 photographs, plans and diagrams take the reader through a vivid selection of successful selling establishments.

247 pages. 8 3/4 x 11 1/4. Illustrated. \$8.95

## PLANNING STORES THAT PAY

by Dr. Louis Parnes

In this book Dr. Parnes demonstrates the amazing degree to which good design speeds and increases retail sales in department stores and specialty chain stores.

With more than 500 illustrations, this book explores each detail of the store and its equipment — entrances, arcades, show windows, furniture and fixtures, shipping and receiving services, departmental and floor layouts, display counter and cabinets, lighting.

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## MOTELS, HOTELS, RESTAURANTS AND BARS

by the Editors of Architectural Record

Emphasis here is on current design trends, techniques and structural features. Within each category, buildings of many sizes, styles, and localities are included. Some of the better-known projects include the Statler Center in Los Angeles, Hilton Hotel in Istanbul, bar and restaurant of the Hotel McAlpin in New York, and Henrici's Restaurant in Chicago. Each project is profusely illustrated with photographs, plans and renderings.

215 pages. 8 3/4 x 11 1/2. Illustrated. \$6.95

## ERIC MENDELSON

(Revised 2nd Edition)

by Arnold Whittick

A thoughtful, handsomely illustrated study of the works and life of one of the outstanding architects of the 20th century. This thoroughly revised edition covers Mendelsohn's work from 1919 until his death in 1953. Beginning with an introduction to European architecture, it then describes Mendelsohn's early life in East Prussia, his successful practice in Germany, his sojourn in England while Hitler was in power, his work in Israel, and lastly his life and work in the United States. The final chapters sum up the significance of his work and artistry, and also contain two essays by Mendelsohn himself. Over 175 illustrations, depicting 75 of Mendelsohn's projects.

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## **SUN AND SHADOW: THE PHILOSOPHY OF AN ARCHITECT**

by Marcel Breuer

One of the world's leading architects and designers gives us this first complete statement of his fundamental beliefs. Breuer's philosophy and work are presented in a series of stimulating chapters and in hundreds of dramatic photographs and renderings. Strikingly designed, the book presents Breuer's work as a series of revolutionary ideas. The same idea, for example, may have resulted in the design of both a chair and a building.

Breuer's own statements tie the book together, and provide lively proof that his worldwide reputation as a major teacher of architecture is well deserved.

208 pages. 8 x 10½. Illustrated. \$7.50

## **STRUCTURES**

by Pier Luigi Nervi

Pier Luigi Nervi of Rome draws on over 30 years of experience as architect, engineer, and builder. Contains much valuable information on the properties of concrete and "Ferro-cemento", which was developed by the author and used by him in the construction of some of the largest and most beautiful thin-shell concrete structures in the world.

Alternately practical and philosophical, the book considers such varied subjects as architect-client relations, training of designers and builders, theory of structures, and building in reinforced concrete. Contains photographs of all of Nervi's major works, as well as numerous sketches and plans. STRUCTURES will be a gift of unusual interest for any architect, engineer, or contractor on your list.

118 pages. 7¼ x 9½. Illustrated. \$6.95

## **THE NORTHWEST ARCHITECTURE OF PIETRO BELLUSCHI**

Edited by Jo Stubblebine

Collected here for the first time in book form is the work of Pietro Belluschi, a major exponent of the contemporary style, and a man who has made an historic contribution to American architecture.

112 pages. 8 x 10½. Illustrated. \$6.50

## **JAPANESE TEMPLES AND TEA-HOUSES**

by Werner Blaser

The new English edition of a prize-winning Swiss book, profusely illustrated with brilliant photographs (8 in full color), line drawings and plans of classic examples of Japanese architecture. Its thoughtful text examines the social, historical, and spiritual forces which produced this highly refined art, and gives — as a result — a richer, new perspective in which to view all architecture, including our own contemporary work.

Blaser, a Swiss designer who has studied under Alvar Aalto in Finland and Mies van der Rohe in America, visited Japan in 1953, at which time the photographs, line drawings, and plans in this book were executed. Although the text is lucid and analytical, it is the author's intention to let the photographs speak for themselves; in Blaser's own words, "... to suggest how these structures might shadow forth a new spiritual style for the West."

156 pages. 9¼ x 12¼. Illustrated. \$12.75

## **THE JAPANESE HOUSE AND GARDEN**

by Tetsuro Yoshida

A superbly illustrated study of a subject which has had a profound effect on twentieth-century Western architecture. Here, in a magnificent selection of halftones and line engravings combined with a factual text, the Japanese house and garden is brilliantly analyzed by Japan's great contemporary architect, Tetsuro Yoshida.

American architects and designers will find here a vital source of concepts and applications. The house has many large doors and

windows, creating a strong link with nature. The plan is flexible and room divisions are easily changed. Built-ins are used to create space and efficiency. Components are standardized and modular for rapid, cheap construction; yet the individual character of each house is preserved.

204 pages. 8½ x 10½. Illustrated. \$12.50

## **SCHOOL PLANNING AND BUILDING HANDBOOK**

by N. L. Engelhardt, N. L. Engelhardt, Jr.,  
and Stanton Leggett

A new work by three prominent school planning consultants who are also authors of several earlier works in this field. In addition to their own extensive knowledge of the field, gained from over 35 years of successful practice, the authors have also included material gained from over 85 other leading authorities. The result is one authoritative work which contains every item of basic information needed to plan and execute a school building program.

Organized into 40 concise chapters, this book analyzes, in logical sequence, such topics as surveys and site selection; specifications; problems associated with bidding; contracts; supervision of construction; the timetable for school building projects; and many other specific points. There are 53 detailed checklists, schedules, and sample documents such as contracts, bids, performance bonds, and application form. The book also contains plans, charts, diagrams, and other graphic material.

626 pages. 6 x 9. Illustrated. \$12.75

## **SCHOOLS FOR THE NEW NEEDS: Educational, Social, Economic**

by the Editors of Architectural Record

66 new school buildings which are working proof that sound planning can pay off in better buildings at lower cost. These new schools were selected from all areas of the country to present a wide geographic and climatic variety.

The book is divided into 3 extensive sections: Cost Studies, Elementary Schools, Secondary Schools. Each section contains over 20 complete case studies, and is profusely supplied with photographs, plans, charts and diagrams. Over 900 illustrations altogether.

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## **PLANNING ELEMENTARY SCHOOL BUILDINGS**

by N. L. Engelhardt, N. L. Engelhardt, Jr.,  
and Stanton Leggett

A comprehensive study of design standards, equipment, and facilities required for today's elementary school buildings. The authors trace the pattern of daily pupil-teacher-administrator activities and relate them to the problems of physical design, discussing and specifying the buildings and facilities needed to accommodate these activities.

PLANNING ELEMENTARY SCHOOL BUILDINGS covers every aspect of primary school planning. Entire sections are devoted to such topics as surveys and site selection; organization and size of buildings; vision, light and color; classrooms, specialized educational spaces; administrative and teacher spaces; service spaces and facilities; wider use of school buildings; trends in space provisions. Complete charts of typical activities, and the equipment and facilities they require, provide convenient checklists for ready reference. The book contains over 250 excellent photographs, tables, diagrams and sketches.

268 pages. 8¼ x 11½. Illustrated. \$12.50

## **TOWARD BETTER SCHOOL DESIGN**

by William W. Caudill

A valuable book by one of America's top authorities on school planning which sums up years of research and study in this important field.

In addition to his own creative thinking, the author has drawn from the ideas and works of scores of leading architects and edu-



cators. Incorporated with the text are 91 complete case studies, ranging from the design of an easel to the planning of an entire school system, where adherence to the principle of solving the specific problems involved has resulted in better schools which give the taxpayer the most for his money.

288 pages. 8 3/4 x 11 1/4. Illustrated. \$12.75

## NEW GERMAN ARCHITECTURE

by G. Hatje, H. Hoffman, K. Kaspar

A brilliant study of the renaissance of German architecture from 1945 until the present, with special emphasis on the years since 1950. The best of all postwar construction is presented — a total of 133 projects of all types, each illustrated with 3 or more photographs, plans, and sketches, and each discussed in a frank, constructive text. Over 550 photographs and drawings.

220 pages. 7 3/4 x 10 3/4. Illustrated. \$11.50

## PRACTICAL HOUSES FOR CONTEMPORARY LIVING

by Jean and Don Graf

Displayed in this new book are forty houses with "built-in personalities" — houses that reflect their owners' tastes and living habits like a mirror reflects an image. Selected from all regions of the U. S., they represent many prevailing styles of architecture, and prices range from \$7500 up.

174 pages. 8 3/4 x 11 1/4. Illustrated. \$6.95

## A TREASURY OF CONTEMPORARY HOUSES

by the Editors of Architectural Record

Here are 50 contemporary houses designed by some of the world's leading architects; the ultimate in quality contemporary design.

Most of the houses are depicted in 10 or more photographs, illustrations and plans. Over 600 superb illustrations accompany a pertinent, lucid text. The story behind each house is presented simply in its essentials with no involved technical language.

215 pages. 8 3/4 x 11 1/4. Illustrated. \$5.95

## 82 DISTINCTIVE HOUSES

selected from Architectural Record

On display here are 82 of the finest houses published in *Architectural Record* in the past few years. Each house is depicted in superb interior and exterior photographs which dramatize its design and convey its individuality.

These 82 houses represent a wide range of localities, living habits, personal tastes, and sites. Comprising the last 100 pages are special Time-Saver Standards data for Houses.

437 pages. 8 3/4 x 11 1/4. Illustrated. \$8.00

## ARCHITECTURAL PHOTOGRAPHY OF HOUSES

by Robert C. Cleveland

Lavishly illustrated with some 350 vivid photographs of fine houses, in both contemporary and traditional styles, this book reveals the expert craft of the architectural photographer.

170 pages. 8 3/4 x 11 1/4. Some 350 photographs. \$7.50

## DESIGN AND CONSTRUCTION OF GENERAL HOSPITALS

by the U. S. Public Health Service

A collaborative publishing effort of *Architectural Record* and *The Modern Hospital*

This book presents prototypes of successful hospital design, complete with 30 master plans for hospitals of every size. Each plan is accurately scaled, fully detailed, and visualized in skillful rendering. Illustrations of floor plans, site plans, and a variety of charts and tabular data help to provide step-by-step guidance in planning the general hospital.

214 pages. 8 3/4 x 11 1/4. Illustrated. \$12.00

## COMMERCIAL BUILDINGS:

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by the Editors of Architectural Record

This book is a vivid pictorial record of a revolution in design exemplified by scores of the best buildings erected during the past seven years. These projects clearly demonstrate the new design themes, the novel materials and structural methods, which have won wide acceptance in recent years. Each project is shown in a series of photographs, floor plans, structural features, and major details of design.

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by the Editors of Architectural Record

All of the famous Building Type Studies on industrial buildings published by *Architectural Record* over a ten-year period — including the extremely active war and post-war years — are reprinted in this immense 546 page volume.

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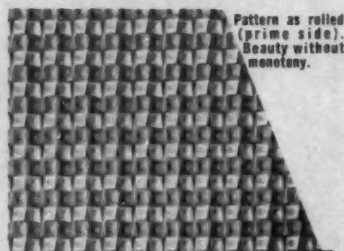


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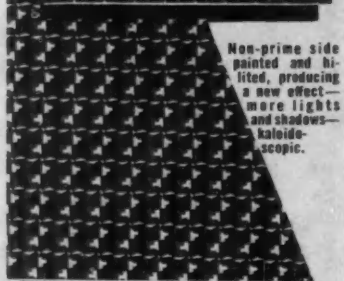


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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 308)

give attention to various factors when employing a new architect. They may wish to know the size of his staff and whether he has his own heating or structural engineers, or whether these services are provided by other firms. They may want to know something of his relationships with materials and supply dealers, with contractors, and with previous employers or clients. In addition, the board will probably wish to give particular attention to the employing contract terms.

"The development of a school building program may be a major enterprise for a community, and boards of education and school officials are not always familiar with some of the problems of designing and constructing school buildings. Hence, it may be important that the contact with the architect be clearly defined to indicate to the board members what services they are purchasing, their payment schedules, and their relationships with the designer, and with the contractor.

"Care in developing these early plans may help to avoid later misunderstandings on services rendered, costs, and authorities."

There follows a rather complete outline on architectural and design services, selecting and employing an architect, and the board contract with the architect.

## FAMILY HOUSING STANDARDS REVISED BY BUDGET BUREAU

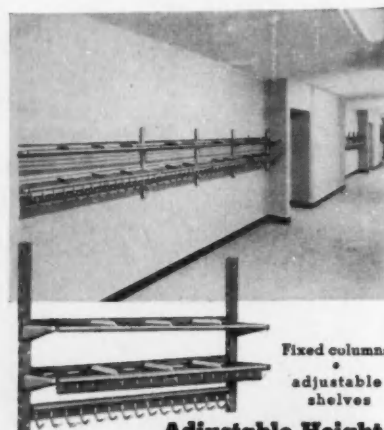
The Federal government — through its Bureau of the Budget — has recognized family needs for more housing space.

Partly as a result of views brought by housewives to the first Women's Housing Congress sponsored in 1956 by the Housing and Home Finance Agency, Budget has revised its construction standards on housing built for Federal personnel to provide more rooms.

The new policies, according to the Bureau's announcement, are providing "generally more strict conditions for justifying construction and more flexibility in the size and features of family housing than the government has applied in the past four years."

Henceforth housing is to be built for Federal employee occupancy only where necessary to maintain the continuity

(Continued on page 320)



Fixed columns  
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## Adjustable Height WALLMOUNTS



**Schooline®**  
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Solve the pupil wraps problem efficiently with Wallmount Coat and Hat Racks. Mount on any available wall space. Hat shelves and hanger bar adjustable on permanently attached columns to height for any age group. Double hat shelves and double row of spaced coat hooks accommodate 6 pupils per running foot. Basic 3' 2" or 4' 2" units interlock to make continuous racks to fit any space or capacity requirements.

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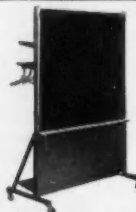
### CHALKROBE®

Dual-purpose wardrobe. Provides two 4 ft. hat shelves, 4 ft. Hook and Hanger rails for coats adjustable in height to all age groups. 4 ft. overshoe shelf. And, on other side a 50" x 48" chalkboard. Portable or stationary.



### CORKROBE®

Identical to Chalkrobe but with pin-up cork board instead of "Chalkboard". These units permit complete flexibility in use of floor space. Can be anchored to floor, or wheeled about on casters. Hold wraps out of the way in orderly and efficient manner.



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With closure panels (as original equipment or add-on units) Chalkrobe and Corkrobe units serve as flexible room dividers, movable walls or screens. Widely used to enclose temporary class rooms, to "build" cloak rooms, meeting rooms, etc.

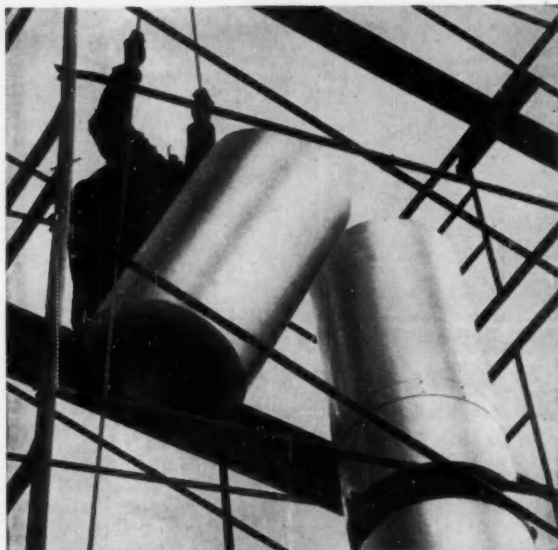


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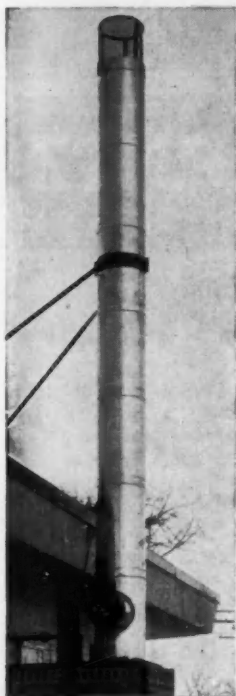
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3-ft. section of Van-Packer Stack is hoisted into place. Sections are cemented together and secured with joint bands.

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Available nationwide through Van-Packer heating and building material jobbers and manufacturers representatives. See "Chimneys — Prefabricated" in Yellow Pages, or write Van-Packer.



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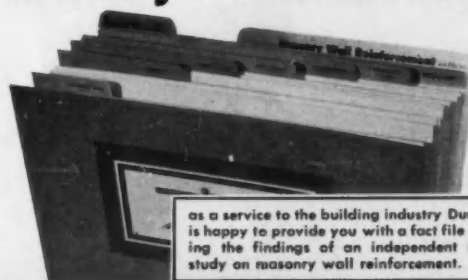
FOR SPECIFICATIONS SEE SWEET'S CATALOG 23J  
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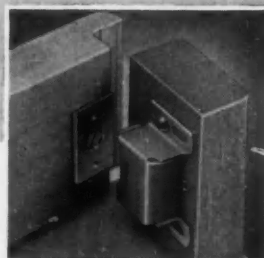
EPCO Magna-tite magnetic catches feature lifetime magnets . . . self-aligning to enlarged strikes . . . great versatility of mountings and are quick and easy to install. Non-corrosive aluminum cases are neat in appearance and are available in special finishes on request.

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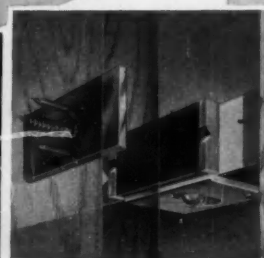
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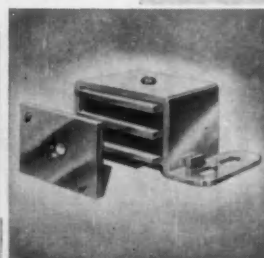
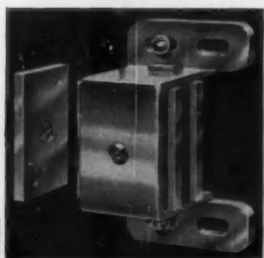
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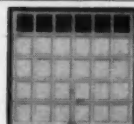
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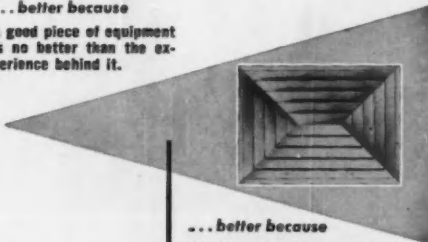
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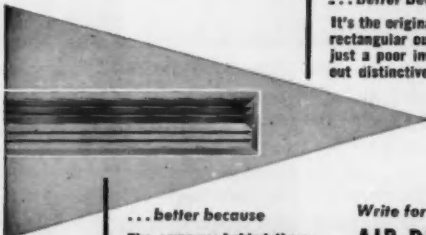
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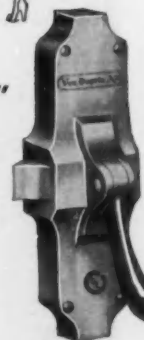
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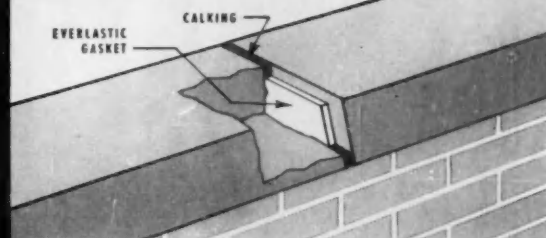
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## New office building of Union Federal Savings & makes extensive use of PITTSBURGH GLASS



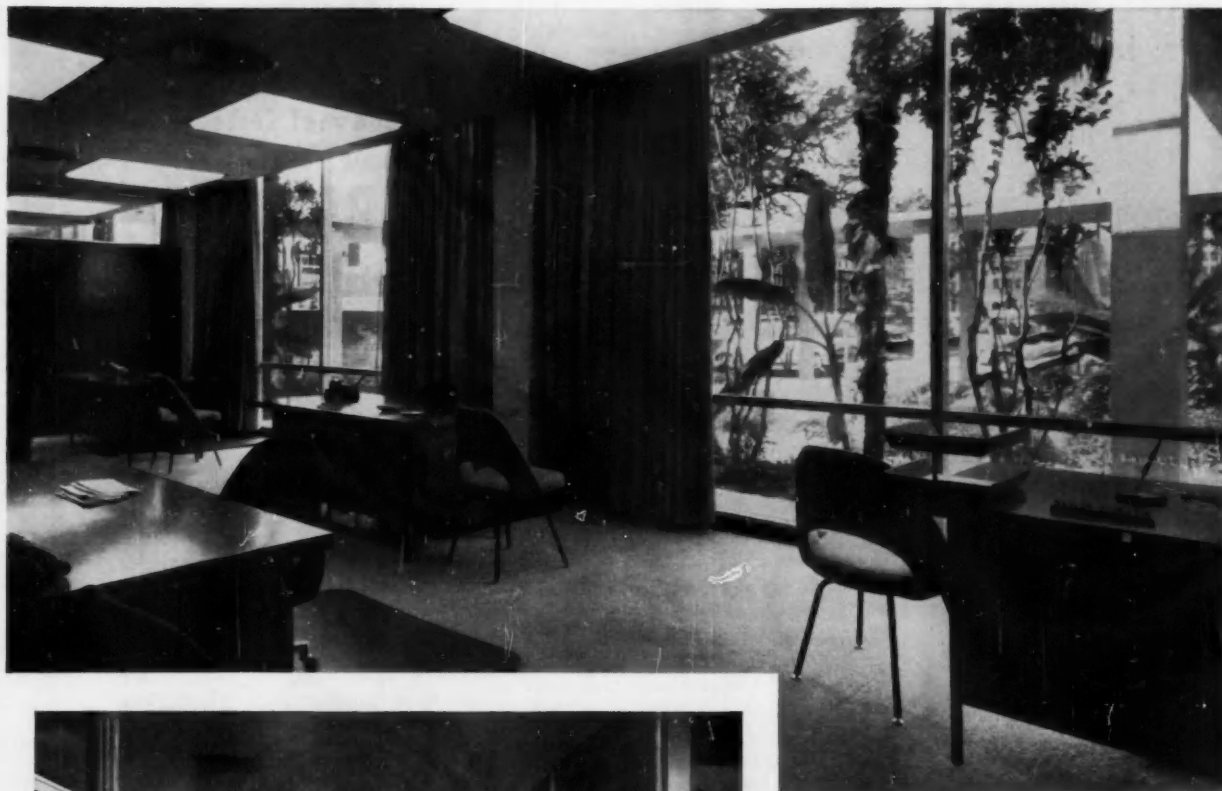
**THIS DISTINCTIVELY DESIGNED** building in Baton Rouge, Louisiana, is occupied by the Union Federal Savings & Loan Association. One of the most impressive structures in the South, it utilized Pittsburgh's rough SOLEX® in the spandrel areas, and for greater interior comfort, SOLEX Heat-Absorbing Glare-Reducing Plate Glass was used in the vision areas.

This is the first multi-story glass-clad building in Baton

Rouge. The exterior is constructed with Pittsburgh's PITTCO® 82-X system of metal curtain-wall framing. This is a completely integrated system consisting of metal supporting members and glass for the spandrel and vision areas. In addition, the entrances are equipped with HERCULITE® Tempered Plate Glass Doors, and the spandrel areas are insulated with PC FOAMGLAS®. Architect: A. Hays Town, Baton Rouge, La.

Design it better with **PITTSBURGH GLASS**

## Loan Association in Baton Rouge, Louisiana, to enhance its advanced architectural design



**THIS VIEW** shows the first-floor loan section. Here a wall of Pittsburgh Polished Plate Glass brings in the outside with its interesting patio.

**ENTRANCES**, such as this one to the Union Federal Savings & Loan Association building, are equipped with HERCULITE DOORS, set in TUBELITE® Frames. HERCULITE is Polished Plate Glass which undergoes a special tempering process, making it four times stronger than ordinary glass of the same thickness.

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## THE RECORD REPORTS WASHINGTON TOPICS

(Continued from page 314)

and efficiency of the government service. In no case will the government construct family housing if private capital can be found to finance it.

The new range of sizes in the revised document ("Design Standards for Construction of Permanent Family Housing for Federal Personnel") permits a household of four persons to have five, five and one half, or six rooms instead of the four and one-half or five rooms previously allowed. A six-person household can now have seven rooms instead of six.

If a particular location justifies, the government now will allow recreation space, extra storage space, fireplaces and air conditioning, the design manual states.

(The 90-page booklet is sold by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 35 cents per copy.)

The revision is fairly complete with chapters on building planning, structural design principles, footings and foundations, floors, exterior wall coverings and flashings, interior coverings (walls, partitions and ceilings), roofing, stairs and exits, fire resistance, sound resistance, condensation control, termite decay resistance, plumbing and sanitation, mechanical ventilation and summer air conditioning, electrical, and miscellaneous equipment.

The manual is not illustrated except for occasional explanatory tables.

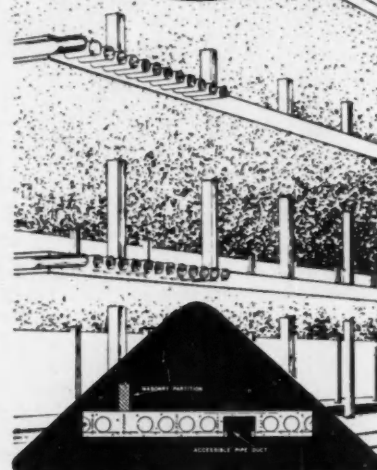
The current revision was effected by the Housing and Home Finance Agency with suggestions from affected agencies, the Bureau of the Budget said, explaining the standards had been brought up to date with technological developments in the housing field.

### CONFERENCE PROPOSED FOR BUILDING LABOR PROBLEMS

Labor Secretary James P. Mitchell has offered to meet with construction labor and management in an effort to see what can be done toward lowering costs and setting high standards for housing, productivity, and the training of new workers. Last month representatives of both labor and management were considering the proposal which, in effect, was a suggested informal discussion of the industry's long-range problems.

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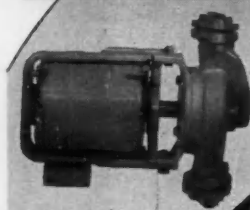
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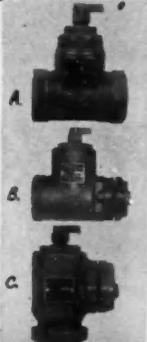


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Florida Southern College, Lakeland, Florida • Architect: Frank Lloyd Wright •

## TOMORROW

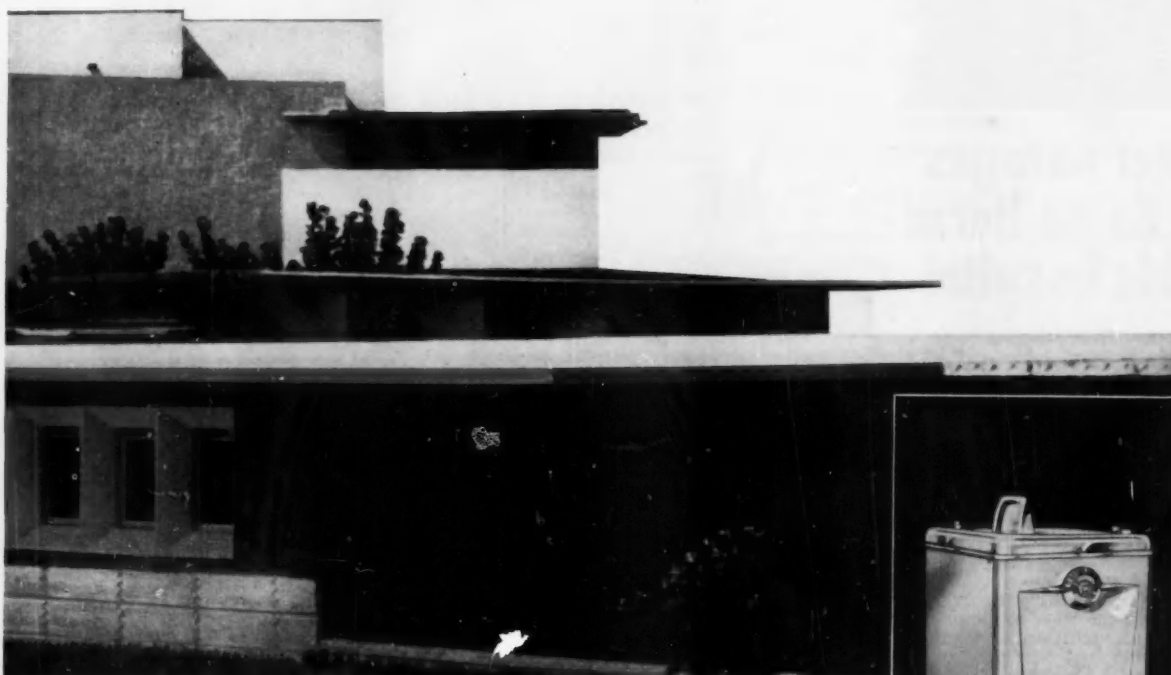
**The largest concentration** of Frank Lloyd Wright architecture is here at Florida Southern College . . . rightly called the "College of Tomorrow." Mr. Wright at his drawing board has turned sand, cement, steel and glass into one jewel-like building after another—nestled in an orange grove setting of unbelievable beauty. Units include a striking circular library, a huge water dome stocked with black bass and a theatre-in-the-round. At a cost of \$20 million, the campus will be completed in the

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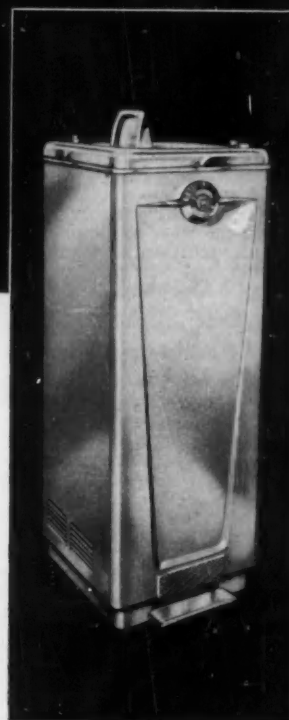
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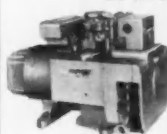
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Minneapolis 14, Minnesota

## REQUIRED READING

(Continued from page 62)

### DESIGN OF STEEL

... *Structures, Including Applications in Aluminum*, by Gaylord and Gaylord is intended as a textbook for civil engineering courses, and deals with the design of structural members and their connections, with applications to steel bridges and building frames. Understanding of the basic philosophy of structural design is emphasized. *McGraw-Hill Book Company, Inc.* (N. Y.) 540 pp., illus., \$8.00

### HARD METALS

*A Handbook of Hard Metals*, by W. Dawihl, explores the scientific principles of sintering and describes the technical production of hard metals. *Philosophical Library* (N. Y.), 162 pp., \$10.00.

### EDUCATION FOR PLANNING

... *City, State, and Regional* by Harvey S. Perloff, is devoted to the question of what is an appropriate intellectual, practical, and philosophical basis for the education of city and regional planners. *The Johns Hopkins Press* (Baltimore), 1957, 189 pp., \$3.50.

### ART OF SCHOOL BUILDING

*Work Place for Learning*. By Lawrence B. Perkins. Reinhold Publishing Corp. (N. Y.), 1957. 63 pp., illus. \$4.00.

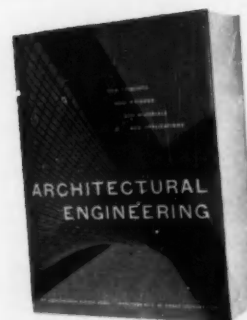
Many photographs, a number of them in color, illustrate this interesting survey of a group of Perkins & Will's schools. Mr. Perkins explains that the book is limited to work of his own firm—though it meant omitting much good school design—because the treatment of the schools required showing examples whose exact purpose and intended effect were known intimately. The Libbey-Owens-Ford Glass Company, incidentally, commissioned the book, because of the company's interest in good school design; the author, however, was given complete freedom in putting it together.

Discussing the *art*, rather than the science, of school building, Mr. Perkins considers—and illustrates—approaches, corridors, offices, classrooms, lighting, the use of color, and other aspects of fashioning a "tool for the teacher" that is also an environment that will contribute as much as possible to "the full growth of each child's mental, physical, and spiritual potentials."

P. C. F.

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	Progressive Architecture . . . . .	16,424
	Architectural Forum . . . . .	13,492
Compare ... Engineer Circulation	Architectural Record . . . . .	9,824
	Progressive Architecture . . . . .	8,576
	Architectural Forum . . . . .	4,614
Compare ... Cost per Page per 1,000 Architects and Engineers	Architectural Record . . . . .	\$25.32
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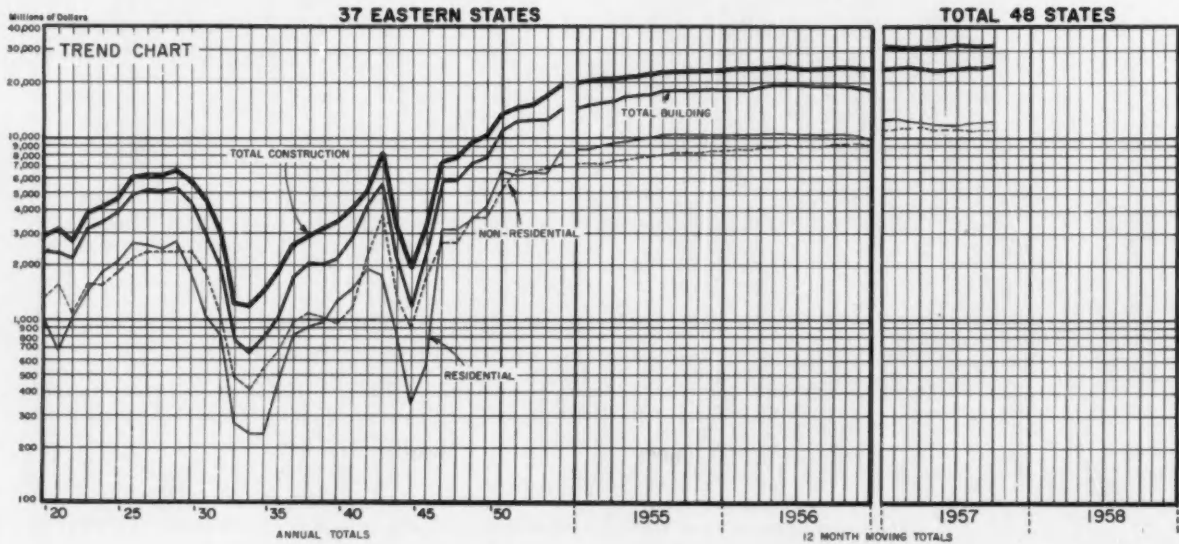
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# ARCHITECTURAL RECORD

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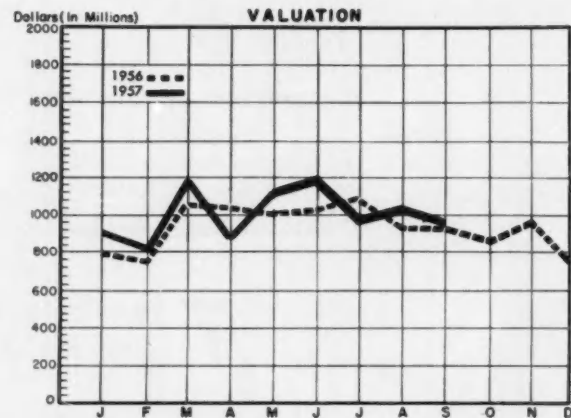


Charts by Dodge Statistical Research Service

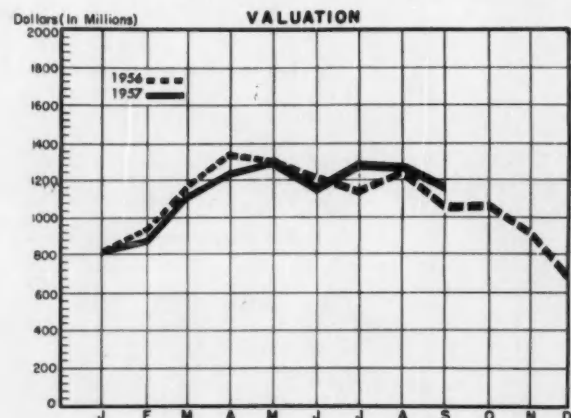
## RESIDENTIAL LEADS SEPTEMBER GAINS

A two per cent increase in dollar volume over the same month last year was tallied by September contracts for future construction in the U. S., F. W. Dodge Corporation reported, and residential contracts, registering a ten per cent increase, led the way, with one- and two-family houses accounting for a large share of the improvement. Nonresidential contracts for the month were up one per cent from September 1956 on a dollar volume basis; the commercial, educational and science, social and recreational and public buildings categories all showed gains. Dollar volume of heavy engineering contracts declined 11 per cent from the 1956 month. The cumulative total of contracts for future construction in the U. S. for the first nine months of 1957 amounted to \$25,301,580,000, an increase of two per cent over the first nine months of 1956; the nonresidential total was up two per cent for the period, residential almost unchanged (though the total number of units was down six per cent), heavy engineering up five per cent.

## NONRESIDENTIAL BUILDING



## RESIDENTIAL BUILDING



Source: F. W. Dodge Corporation

### RELIGIOUS BUILDINGS\*

Construction Contracts—Regional Comparison

Dodge Regions	Number of Projects		
	1947	1952	9 months of 1957
Region I	175	194	266
Region II	429	879	1060
Region III	428	583	730
Region IV	325	523	661
Region V	569	861	1125
Region VI	245	427	435
Region VII	397	517	635
<b>37 eastern states</b>		<b>3568</b>	<b>3984 4912</b>

\* Churches are the subject of Building Types Study No. 253, pages 171-189





**SANITATION** is all-important here, and with Jamison Stainless Steel Clad Doors, cleaning is simplified, maintenance is no problem. Note Jamison Door Closer that saves refrigeration.



**FOUR-WINDOW** refrigerator front—also stainless steel clad—glazed with three thicknesses of plate glass  $\frac{1}{4}$ " thick. Sturdy hardware is chromium plated heavy cast bronze.

\*The Bishop Clarkson Memorial Hospital was the winner of the 1955 "Hospital of the Year" award.



## Gleaming JAMISON stainless steel clad doors selected for "Hospital of the Year"\*

Like the new Bishop Clarkson Memorial Hospital in Omaha, Nebraska, more and more hospitals (and hotels and restaurants) are specifying stainless clad Jamison Doors to meet their rigid sanitary requirements at economical cost. Jamison's unmatched experience plus complete flexibility of design is your assurance of the practical solution to any door problem.

"How to Select and Specify Cold Storage Doors"—a helpful booklet you should have—answers your questions on the many factors involved in specifying cold storage doors. For your copy write to Jamison Cold Storage Door Co., Hagerstown, Md.

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*Insulator:*  
Kelley Asbestos Prods.  
Co., Omaha, Nebr.



More JAMISON Doors are used by more people  
than any other Cold Storage Door in the world.

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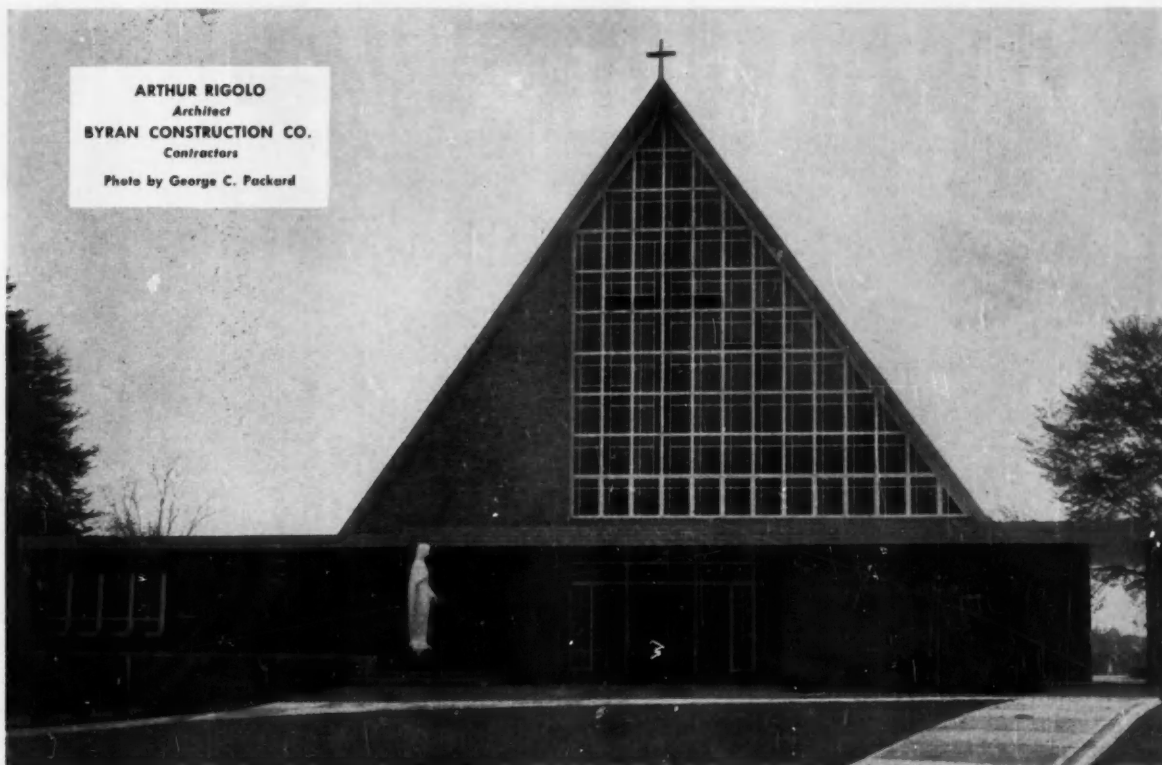
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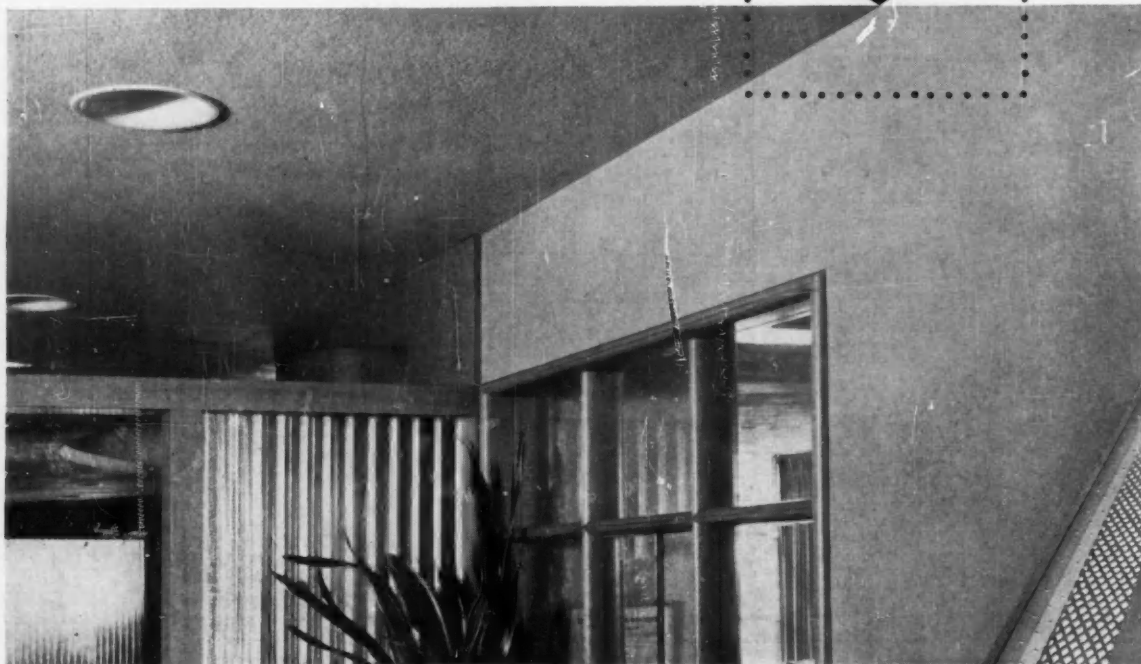
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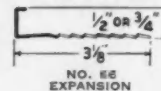
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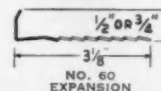
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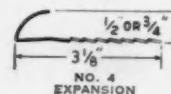
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							Length	Width	Height	Mounting	
SINGLE LAMP (For Temperatures 50° F. and Above)											
(1) F200T12 RS/VH025	200	1.5†	118	2.2	247	390	16 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{3}{8}$	16%	RQC-2S102-CW
TWO LAMP (For Temperatures 50° F. and Above)											
(2) F48PG17 or (2) F100T12/ RS/VH025	107	1.5†	118	2.2	247	280	16 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{3}{8}$	16%	RQB-2S102
(2) F96PG17 or (2) F72PG17 or (2) F200T12/ RS/VH025	200	1.5†	118	4.0	470	525	16 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{3}{8}$	16%	RQB-2S200 / RQB-2S201
TWO LAMP (For Temperatures 0° F. and Above)											
(2) F48PG17 or (2) F100T12/ RS/VH025	107	1.5†	118	2.2	247	390	16 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{3}{8}$	16%	RQC-2S102-CW
(2) F96PG17 or (2) F72PG17 or (2) F200T12/ RS/VH025	200	1.5†	118	4.0	470	590	16 $\frac{1}{4}$	3 $\frac{3}{8}$	2 $\frac{3}{8}$	16%	RQC-2S200-CW / RQC-2S201-CW

†VH025 lamps operate at 1.25 amps.

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